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ORISSA REVIEW

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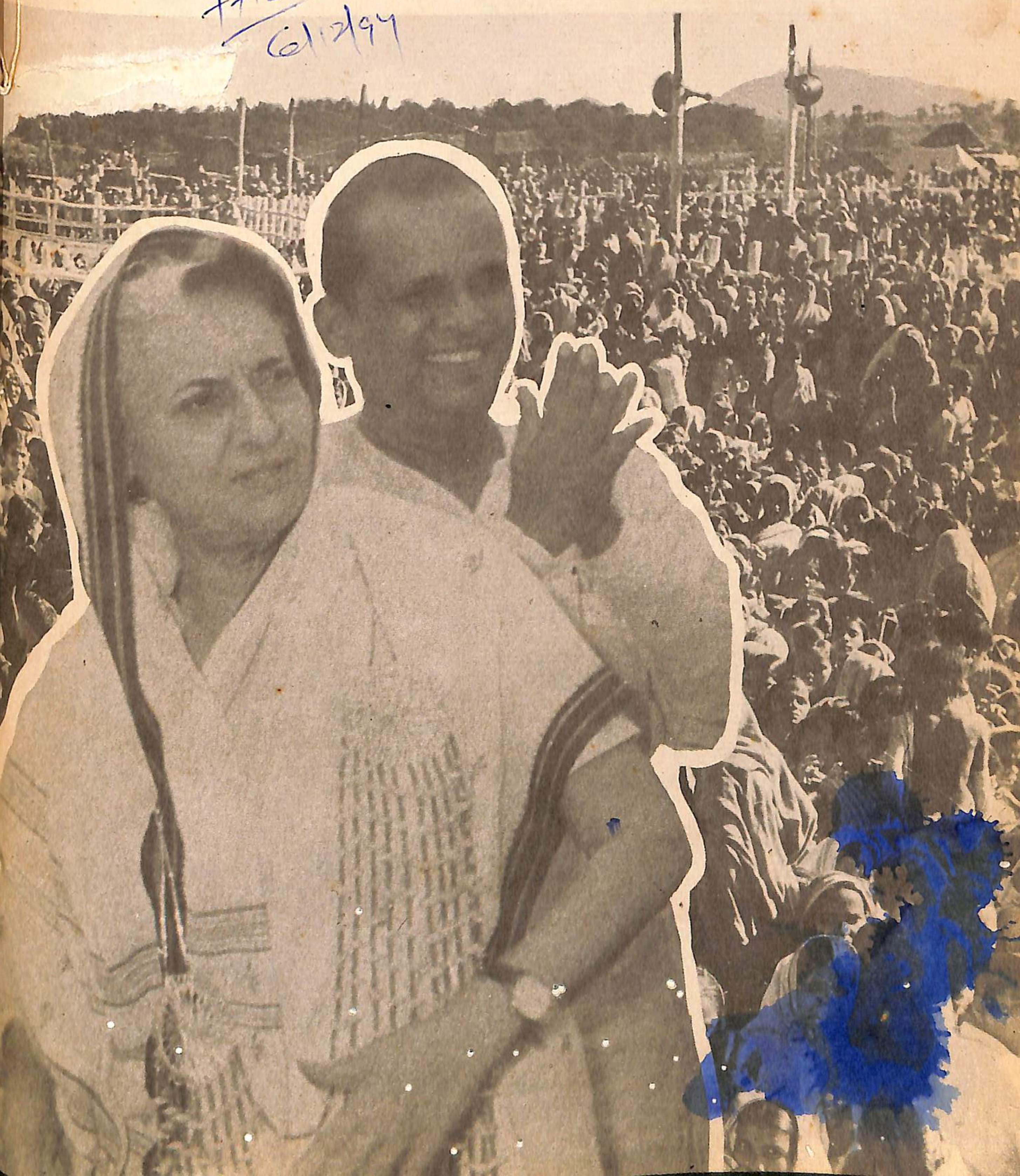

Long live, oh my blessed child !
May my silvery hair be yours,
You cared to be merciful to me in this unwanted life
And your Government has a soft corner
For a person like me.

I was blind when I touched the earth;
Denied I was of all mundane bliss
Oh who thou hast provided
Succour to me unasked

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ORISSA REVIEW seeks to provide a condensed record of the activities and official announcements of the Government of Orissa and other useful information. Many items appear in summarised form. Such items should not be treated as complete and authoritative versions.

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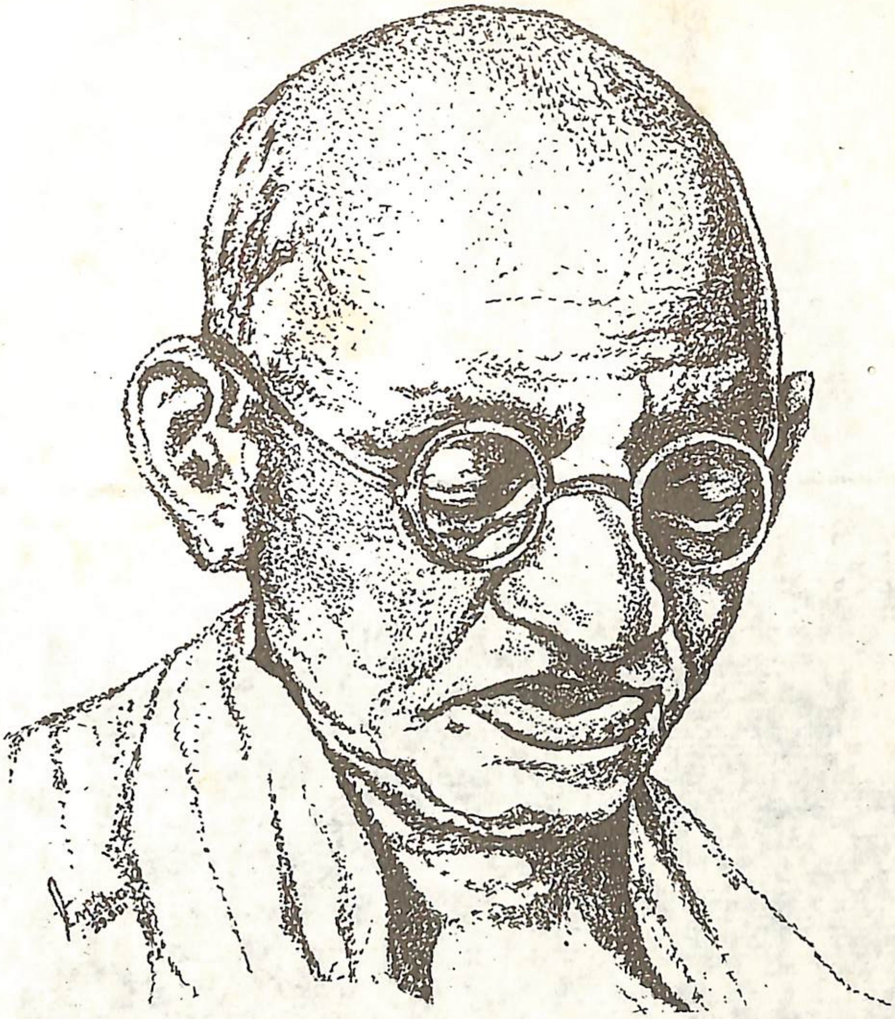


A Prayer

Lord of Humility,
dwelling in the little pariah hut
Give us thy humility,
give us the ability and willingness
To identify ourselves
with the masses of India.

Humility personified,
that we may know the land better
and love it more.

—MAHATMA GANDHI

Prime Minister's seven hour visit to Orissa

Welcome to
Prime Minister
at Bhubaneswar
Air-Port

Review of Progress of the State

"Orissa has my blessings always. it is a very rich State, you know....It has got mineral resources. It has very talented people".

A beaming Prime Minister Mrs. Indira Gandhi conveyed her feelings about the State in these words at her last engagement—an impromptu press conference—during her seven-hour breath-taking visit to Bhubaneswar on September 4, 1981.

That these feelings have been amply reflected in the centre's dispensation towards Orissa after Mrs. Gandhi came back to power in January, 1980 could not be denied, judging by the massive investments sanctioned for the Alumina-Aluminium Complex and the Paradip Fertiliser Project. Another case-in point is the inclusion of the proposed Steel Plant at Paradip in the Sixth Plan.

It was not that these feelings came to her mind on the spur of the moment when a reporter in the context of the new oil find off Bombay shore asked if she would bless Orissa so that oil could be found off Orissa coast or some such thing would happen to the State and enrich its economy.

Infact Mrs. Gandhi's remarks came after a gruelling indepth study of the pace and progress of the development programmes in the State. Obviously the feelings were indicative of her satisfaction, although she made it clear that there was no room for complacency.

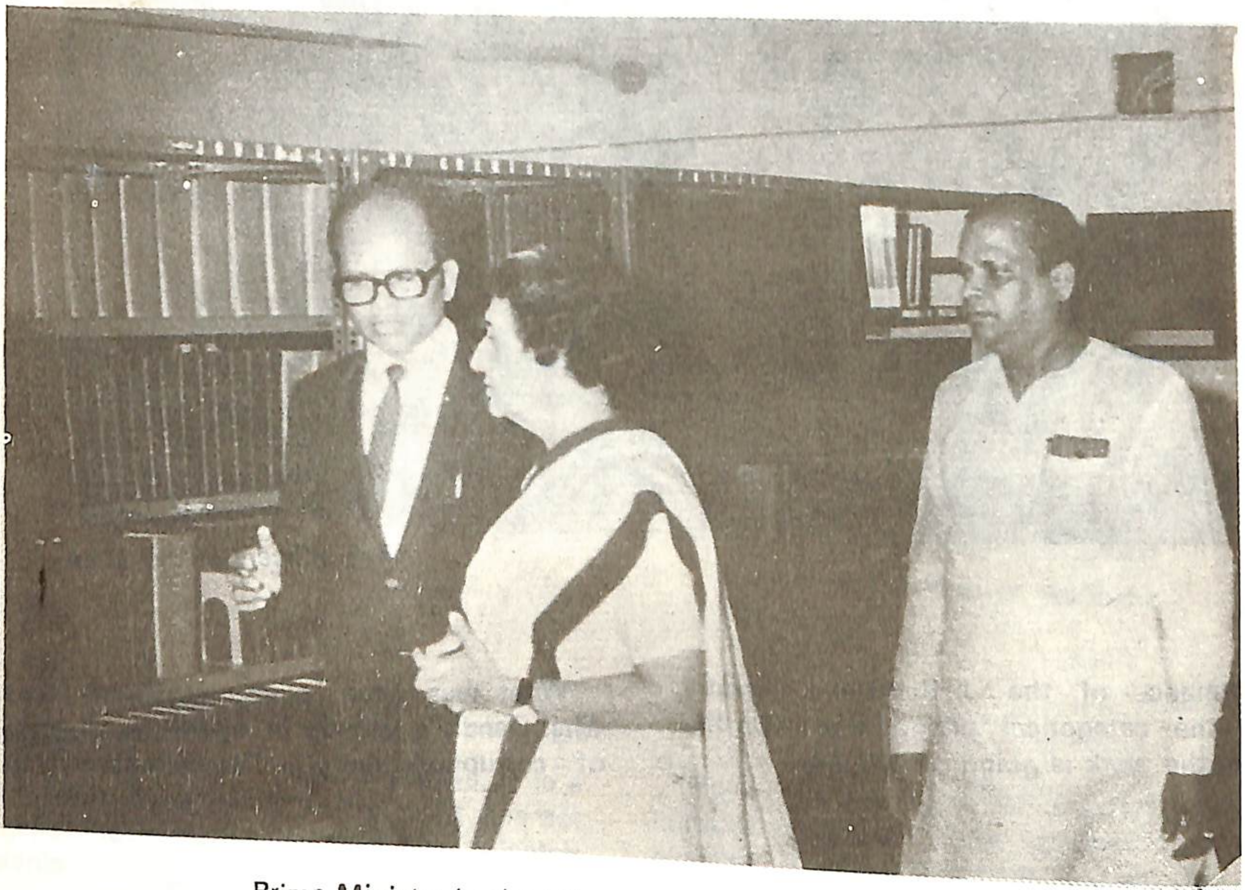
"As I have said earlier we can always do better, but most people in India are working with great handicaps. There are financial stringencies and other problems", She said replying to a reporter's question about the

Top officers of the State

performance of the J. B. Patnaik-ministry with the categorical preface that "On the whole the work is going on alright".

What was even more significant was Mrs. Gandhi's remarks in regard to charges of corruption and ineffectiveness being

Top officers of the Centre



Prime Minister in the Library of the Institute of Physics.

levelled by a section against the present Government. "All these are.... Most of these things come when the dissidents try to find out some thing wrong. On the whole the work is going on alright", she said replying to a question. Mrs. Gandhi also emphatically denied that she had rdered a C. B. I. probe in to allegations of ruption against some Orissa ministers.

There was a procedure to deal with such allegations. Usually the person concerned was asked to comment on the charges first, she said.

When a correspondent wanted to know the nature of the charges, the Prime Minister shot back, "you must have seen them in the press before I received. That shows the seriousness when people are more anxious to publicise rather than getting them looked into".

If the questions asked at the press conference gave her an inkling into the topics uppermost in the minds of every body in the State, Mrs. Gandhi's replies were understandably aimed at removing the sense of instability being sought to be created by a section. This might have disappointed the detractors of the Government, but the Prime Minister has set the controversies at rest in no uncertain terms.

Her utterances here have also clarified yet another raging controversy. This relates to the allegation that the Prime Minister's

Inauguration of the new campus of the Institute of Physics

visit to the State capitals to review the performance of the State Governments struck at the very root of the State's autonomy.

Mrs. Gandhi both at her meeting with the ministers and officials at the Raj Bhavan and also at the airport press conference dispelled the apprehensions.

"We have not come here to find fault or put blames, but to discuss the problems and find ways to solve them through mutual help and co-operation", she told the meeting at Raj Bhavan.

Elucidating it further the Prime Minister told the newsmen at the airport that "These meetings are not there to ask to have a detailed review (of the performance). That is the business of the State Government. We come here firstly to be educated about what is happening in the State. Secondly to see how there can be greater co-ordination between the centre and the State. What are the obstacles, what are the difficulties. And also when our central officials meet the local officials, they get to know one another. It is easier in the follow up".

The controversial issues apart Mrs. Gandhi had a two-hour meeting with the Ministers and officials preceded and followed by official level meetings where various problems facing the State in the field of implementation of the core sector programmes came up for detailed scrutiny. Finances as Mrs. Gandhi put was the problem shared by all, but she hoped that with signs of buoyancy in the economy things would improve. She advised the State Government to mobilise additional resources.

One of the subjects on which she stressed was the development of the handloom sector in Orissa. This would help the weaker sections and would enable the "beautiful handlooms" of Orissa to prosper. She advised against dilution in the traditional Orissa handloom designs.

Other subjects she referred to were social forestry, the twenty point and the five point programmes, inculcation of a sense of cleanliness and hygenic enviornment and treatment and improvement of the lots of leprosy patients.

The Prime Minister wanted the administration to be always alive to the needs of the tribals, harijans and the rural poor pointing out that it was on the improvement of their economic condition the development of the country as a whole depended.

The Prime Minister's only public engagement was the inauguration of the new campus of the State Institute of Physics in a sprawling fifty acre plot on the side of the road leading to Nandan Kanan amidst rains.

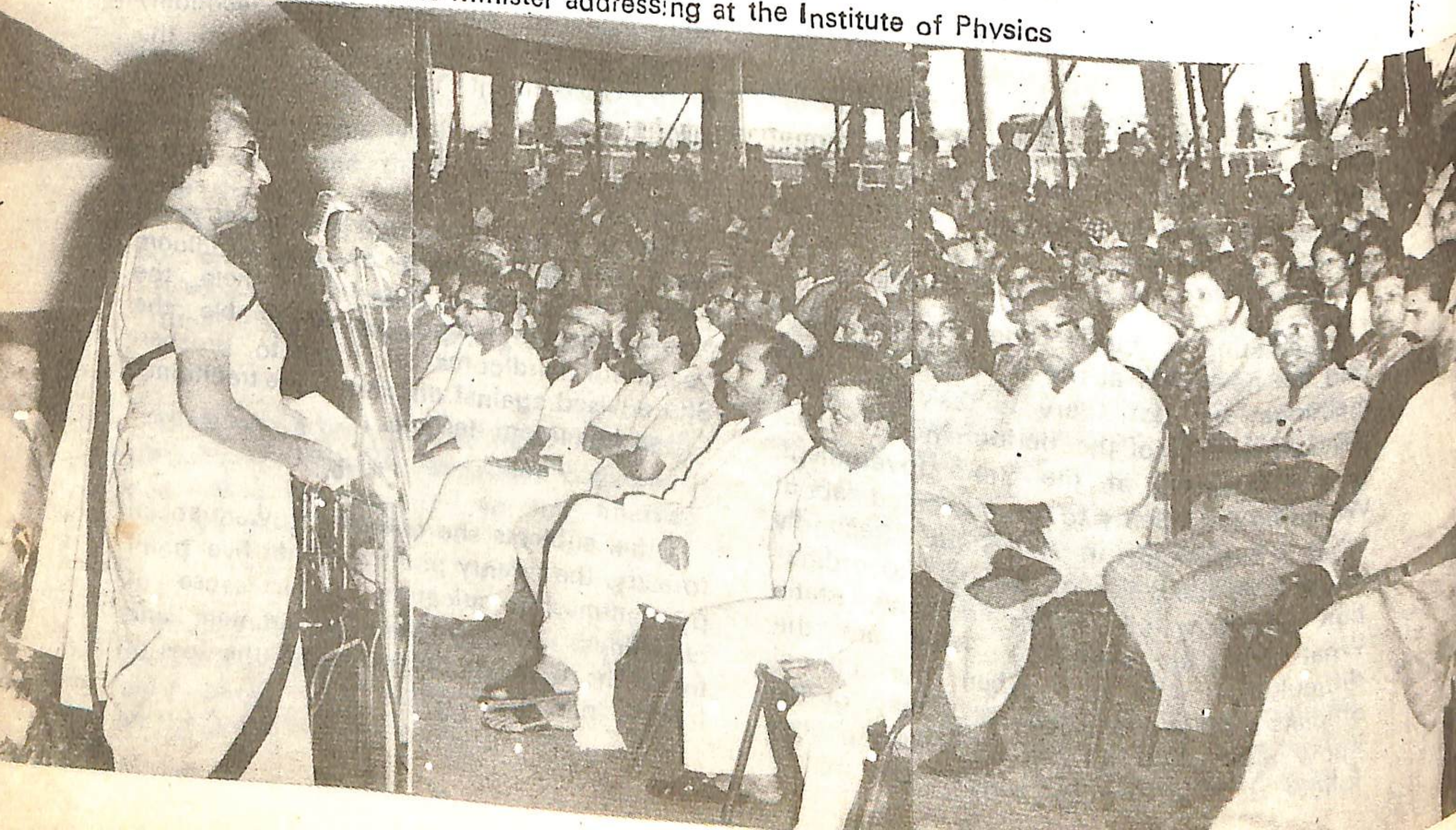
Her dedication to the cause of science and scientists of India was unmistakable. She expressed concern that the country's talented science world did not match its vast population numerically. She said younger students in the schools and colleges must be motivated to take up science so that they became good materials for the future scientific world.

Mrs. Gandhi paid rich compliments to the Indian Scientists and Engineers for their contributions acclaimed all over the world and was particularly happy to have been associated with the function at the Institute of Physics.

In a matter of seven hours Mrs Gandhi dealt with such diverse subjects as politics, administration, planning and science, without showing the slightest sign of fatigue or tireness. She was visibly in command and her beaming smile exuding confidence could be seen when she acknowledged the greetings of a large crowd at the rain soaked Bhubaneswar airport after boarding the Indian Air Force plane on her return journey.

Chief Minister Shri J. B. Patanaik with the people of Orissa is ever grateful to our Prime Minister. who as a festive presentation announced the establishment of the Second Steel Plant at Paradip, Orissa.

Prime Minister addressing at the Institute of Physics



Speech of Smt. Indira Gandhi, Prime Minister of India at the inaugural function of Institute of Physics, Bhubaneswar on September 4, 1981

Chief Minister, Shri Mohapatra & Shri Pradhan.

It gives me a great pleasure to have inaugurated this building and this campus. We do have some institutions of this kind in other parts of India; but much work need to be done in basic sciences. So the activities of this Institute, which is devoted to basic science in all aspects of Physics, are significant and of considerable importance to our country. There have been concentration in three areas—Energy, Solid State and Nueclear Physics. I am very glad to hear that the research output has been good in a short period of existence of this Institute. India has made very good contribution to pure sciences. All of you are familiar with some of our big scientists like Shri C. V. Raman, Dr. Satyendranath Bose, Prof. Saha and several others. We hope that this Institute will produce many such great scientists who will make a mark not only in our country in the field of Indian Science but abroad as well. We are told that a number of Indian scientists are working abroad and have made important contributions in Theoretical Physics. We have now staged a high level of activity in applied sciences which justify much more work being done on basic science, so that bridges between these two branches can be buiit and strengthened. They are dependent on each other and specialised work in each field is essential for progress. It is good that the State Government has taken great deal cf interest in this Institute, not only by beginning it, but also by providing funds and other facilities. The scientific Departments of the Central Government like our Atomic Engergy and Science & Technology Departments are also trying to help this specific project. The C. S. I. R. is also greatly interested in this work, and so it is the endeavour of the members of the faculty to make this a centre of excellence in the field of theoretical physics. This has laid foundation for even greater endeavour in the coming years by having good link with the Universities here and some efforts have already been made by joining theoretical projects with the Utkal University. You shouid be able to attract younger students of schools and colleges and enthuse them to take up science so that they become good material to sustain our future scientific work. It is equally important for us in our schools and other institutions to try to inculcate what is known as the scientific temper. When we have brilliant people in the top ranges of science, unless there is a much bigger base, not only in our cities but even in our rural areas, it will not be possible to produce as many scientists as we need. We quote with pride and pleasure that our scientists are considerable in numbers compared to other countries, but let us look at our total number of people and certainly when you see that, the scientists get lost in the vast masses of the India population. So we need to have this way of looking scientifically at all problems not only a scientific problem but economic, social and developmental programmes as a whole. We need to create in the people an urge to move forward on the strength of emergency and urgency. We do not have all the time in the World if we really want to make a difference, to the standard of living of our people. Human beings have provid that they can always do better than what they consider to be better. I should like to take this opportunity of once again complementing our young scientists and engineers who in spite of very great difficulties and conditions of work do continue to work in our laboratories and institutions. Many of them have tempting offers from abroad and yet they choose to stay here to work for their country's benefit. Some time people highlight certain mistakes that are made. I have always believed that mistakes are a part of learning and after all if you are going to do some thing new, some thing big, you simply can't do it without making a mistake now and then. We should regard that as a part of the process of advancing and going forward. So I give my blessings to this Institute and my good wishes to all those who are going to teach or learn here. I am glad to be associated with this function of inauguration and I hope that it will enable the faculty members and others to work in a congenial atmosphere thereby promoting a better thinking.

Thank you

* * *

Orissa's Progress in Developmental Spheres satisfy Prime Minister

Prime Minister Smt. Indira Gandhi while reviewing the progress of Orissa Government expressed satisfaction over lowering of population growth in the State during the last decade. The meeting was held in Bhubaneswar Raj Bhavan on September 4, 1981. It may be stated in this context that the decadal growth rate of population in Orissa came down from 25·05 (for 1961—71) to 19·72 (for 1971—81). The Prime Minister was of the view that the targets aimed at for 1981-82 should also be achieved. Similarly it was agreed that minor irrigation projects and dug-well programme would continue to receive priority as these yeilded quicker results and provided irrigation benefits to small and marginal farmers.

The points that emerged at the said review meeting is given below :

Irrigation—The State's economy is largely dependant on agriculture as more than 75 per cent of the people derive their livelihood from it. At present, agriculture in the State is mostly rain-fed, the irrigated area being hardly 20 per cent during Kharif and 10 per cent during Rabi. It was agreed that the on-going major and medium irrigation projects would be completed without any further time and cost over-runs. *Inter se* priorities should be laid for completion of these projects, so that irrigation benefits could become available in a phased manner.

It was agreed that minor irrigation projects and dug-well programme would continue to receive priority as these yield quicker results and provide irrigation benefits to small and marginal farmers.

Power—The progress of work of four-on-going power projects, i. e. Rengali, Upper Kolab, Upper Indravati and Talcher Extension, was reviewed and it was agreed that their present completion schedules would be adhered to.

The delay in commissioning Talcher Extension was particularly discussed. The First Unit will now be commissioned in February 1982 and the Second Unit in October 1982.

The performance of the four existing units ef Talcher (250 MW.) needs improvement and appropriate steps will be taken for this purpose by Orissa State Electricity Board and the Coal CIndia Limited.

The transmission losses in the State would also be brought down.

Central Projects—Problems relating to coal and other minerals and development of Paradip Port were discussed.

Agriculture—It was noted that programmes for crop diversification with special emphasis for production of pulses and oil seeds have been taken up. To meet the edible oil needs of the country, oil seeds production, particularly ground-nut should go up substantially. It was agreed that Orissa's target for higher production of ground-nut at the annual growth rate of 20·5 per cent and of mustard of 25·6 per cent in the Sixth Plan period would be achieved.

Forestry—The State's plantation programmes including social forestry were reviewed. It was agreed that the year-wise targets set for the Sixth Plan will be achieved. The social forestry pfogrammes covering an area of about 280 Km. in length and 1 Km. in depth on the coastal belt to meet the fuel needs of the people and to mitigate the severities of occasional cyclonic winds was discussed and it was agreed that this programme would be stepped up Appropriate programmes will be adopted to check denudation of forests due to "Podu" or shifting cultivation in tribal areas by providing alternative cultivable lands, horticulture schemes etc.

Fisheries—The fishery programmes were reviewed and it was emphasised that infrastructure support, i. e. Ice Plants, communication facilities for marketing and berthing facilities for sea-going crafts will be provided to increase fish production and improve the socio-economic condition of fishermen by ensuring a better return.

Handloom—Programmes in operation for the benefit of handloom weavers were discussed. It was stressed that larger number of weavers should be brought under the co-operative fold to avail of the developmental assistance provided to the industry so that the income of the weavers is raised substantially. While going in for modern designs, the importance of traditional techniques and designs should continue to be recognised.

Rural and Tribal Development—A number of poverty amelioration programmes are in operation. Under the IRD programme about 1,88,000 families will benefit during 1981-82. In addition other such programmes will benefit about 80,000 families. These targets would be achieved. Special attention will be given for the economic betterment of the Scheduled Castes and Scheduled Tribes.

For speedy implementation of the rural development programmes the block level machinery will be strengthened both qualitatively and quantitatively. District level Rural Development Agencies will also to strengthened, The State level monitoring and evaluation cell should be utilised for proper feed-back on the implementation of the programmes and their impact on improving the economic conditions of the rural poor including the Scheduled Castes and Scheduled Tribes.

Family Welfare and Planning—The decadal growth rate of population in the State came down from 25·05 (for 1961—71) to 19·72 (for 1971—81). Satisfactory progress was made during 1980-81 in achieving family planning targets. The targets aimed at for 1981-82 should also be achieved.

Financial Resources—The State Government agreed to fulfil the commitments already made to the Planning Commission for additional resource mobilisation.

Institute of Physics at Bhubaneswar

Prof. TRILOCHAN PRADHAN

With the successful launching of a geostationary satellite, India has entered an era of sophisticated technology. Its scientists and engineers are now able to build research and power reactors, gigantic radio telescopes, medium energy varibale energy cyclotrons, satellite launching vehicles and have started construction of breeder reactors. All these achievements have become possible through the vast industrial base built up in our public and private sectors and the large scientific manpower that the country has acquired over the years. The pure sciences have played an important role in the realisation of these achievements. They are going to play increasingly greater role in future developments in these areas. Viewed against this background of country's development, the establishment of the Institute of Physics at Bhubaneswar has been an important event. Prime Minister Shrimati Indira Gandhi rightly congratulated the Orissa State Government for its establishment while inaugurating the building of the Institute on its new campus on September 4, 1981.

The Institute started functioning in two rooms of the Guest House of the Utkal University on September 4, 1974, when its first full-time Director (T. Pradhan who continues to be the Director) took charge of its affairs. Officially it came to existence on 28th March 1972 with its formal registration as a Registered Society under the Societies Act of Regisration of 1860 and appointment of Vice-Chancellor of Utkal University as its acting Director. The idea of setting up of an Institute of Physics in Bhubaneswar was conceived by late Mr. Banamali Patnaik, when he was Minister of Education of Orissa during 1967—70. An Advisory Committee appointed by the Orissa Government submitted a plan on the basis of which the Government passed a resolution in May, 1970 for the establishment of the Institute of Physics.

The Institute moved from the Utkal University Guest House to its temporary home in Saheed Nagar, a residential locality of Bhubeneswar, in November 1974, where it functioned in four rented buildings for the seven years of its formative stage. During this period the Institute has made an impact in the country and abroad through its academic activities such as publication of research papers, circulation of research reports, regular colloquia delivered by visiting scientists and training programme in advanced physics. It has acquired a reputation for the congenial atmosphere for research, good and cordial relation between faculty members on the one hand and supporting staff on the other, for the well-equipped library and nuclear laboratory it has set up over these years. In recruitment of faculty and research scholars it has tried all along to maintain an all India character of the Institute. Among the present faculty of 15, five and out of 20 research scholars, 6 are from outside the State of Orissa. During this period the Institute hosted one national symposium and organized two of its own symposia in collaboration with the Utkal University. These few opportunities for the young institute to present itself in its best form were crucial factors in creating the impression and impact it has established in the country.

After moving to its temporary home, the foremost task second only to establishing academic activities was to build a permanent home for the Institute. A master plan was prepared by an architectural firm to construct the main building, hostel building, staff quarters, guest house, auditorium, shopping centre, cafeteria, community centre, library, computer centre, workshop and hot laborarory buildings on a 50 acre land donated by the Orissa Government. While drawing up the master plan the vision of a leading national centre for research in physics and allied disciplines was very much kept in mind. The first phase of construction work began in early 1978. The entire area was cleared of thick, bushy jungles and ant-hills and was enclosed by compound wall. Two hundred and fifty evergreen avenue trees were planted after consultation with horticulturists. The Institute moved to this permanent home very recently when the campus was inaugurated by the Prime Minister, Shrimati Indira Gandhi.

The Institute aims to—(*i*) promote research in all branches of physics and allied disciplines (*ii*) to provide training in advanced physics beyond the post-graduate level, (*iii*) to collaborate with other institutions for raising the level of physics teaching and research and (*iv*) to provide technical consultancy to educational institutions and industries.

At present research is conducted in the fields of theoretical high energy physics, solid state physics, atomic physics and nuclear physics. Research in experimental physics has so far been confined to nuclear physics on account of heavy financial investment required for setting of laboratories. The Institute has established a name for the high quality research in all the branches of theoretical physics in which work is being carried out. All the 130 papers written in these fields by the faculty members and research scholars have been published in prestigious international journals and quite many of these papers are often quoted, discussed and used by other physicists in their research work. Over and above these publications in journals, there are large number publications in conference proceedings as contributed papers and invited talks. It has been a matter of pride that almost in all important national conferences Insittute faculty members have delivered invited talks and there have been two to three such talks in each such conference. The participation in these conferences by the Institute scientists have been substantial and impressive.

When the Institute started functioning in 1974, it was decided to start research in experimental physics after two years on a limited scale, two physicists specializing in experimental nuclear physics were recruited in 1977 and a small laboratory with sophisticated and sensitive equipments was set up. Most of these were purchased from the USA and some fabricated locally. The aim has been to keep the instruments running with top efficiency and so as to enable scientists and scholars to take necessary data for their research problems. Expert technicians and technical assistants have been appointed to achieve this. Some of the instruments require to be kept in liquid, nitrogen temperatures. Arrangements have been made with the Frozen Seemens Bank of the Veterinary Department of the Orissa Government located at Cuttack to get liquid nitrogen on a regular basis. The two projects which were started in 1978 provide information about defects and voids in condensed materials and in many ways are complimentary to each other. These are nuclear methods. One is "positon annihilation technique" and the other "compton scattering technique". These provide a method of testing meterials without destroying them. This non-destructive testing of materials by nuclear techniques is of great use in space technology. Materials used in setellites and space vehicles are getting constantly bombarded by cosmic rays when these orbit round the Earth. The extent and character of such damages can be most conveniently studied by positron annihilation techniques. The Institute has recently been awarded a 2·5 lakh rupee project by the Indian Space Research Organization (ISRO) for carrying out such studies.

The experimental research scientists have been able to provide technical consultancy to Orissa Mining Corporation, Bhubaneswar State Forensic Laboratory, Bhubaneswar,

S. C. B. Medical College Cuttack and Regional Research Laboratory, Bhubaneswar. Samples of ores from Sukinda mines supplied by the Orissa Mining Corporation have been tested by the method of "proton induced x-ray emission" (P. I. X. E.) using proton beam from the Van-de-Graaff generator of the Indian Institute of Technology at Kanpur. Preliminary investigations indicate presence in these ores of platinum and molybdenum in minute but substantial quantities. It may be mentioned here that this kind of trace elemental analysis of ores cannot be done by the conventional physical and chemical methods. Trace elemental analysis of bullet marks provided by the State Forensic Laboratory has been made to obtain information to distance of gun from the target etc. which would provide important clue to forensic experts in criminal investigations. Our experimental physicists have also made trace elemental analysis of blood samples of patients suffering from rheumatoid arthritis who have been treated by doctors of the S. C. B. Medical College at Cuttack with medicines containing Zinc compounds in traces Their studies have benefited the doctors in their research work. Similar studies have been made by them for solar cell materials used by scientists of the Regional Research Laboratory at Bhubaneswar.

On account of the multifarious applied work that can be done by nuclear techniques, in particulars the PIXE technique, the Institute has drawn up a plan for the establishment of a Pelletron Generator Laboratory. The pelletron generator is an improved version of the Van-de-Graaff generator that has been used by our scientists. We have sought financial aid from the Department of Science and Technology of the Government of India for installation of this generator in the institute campus. The Saha Institute of Nuclear Physics at Calcutta has shown keen interest in collaboration in this project. It is hoped that this one-core rupees project is sanctioned and the Institute scientists get the opportunity of doing some first rate basic and applied nuclear research.

The importance of training young scientists in advanced physics was organised from the very start of the Institute. The Diploma course in Advanced Physics (Popularly known as Predoctoral Course) was inaugurated in July 1975 by Dr. Raja Ramanna, Director of Bhabha Atomic Research Centre. The Institute has provision for training 15 scholars whose minimum qualification has to be M. Sc. degree in Physics or allied disciplines. The courses are problem oriented and designed to acquaint the students with the latest developments in all branches of physics. After the completion of the course the students either take up doctoral research work in the Institute of teaching work in colleges. There is provision for 20 doctoral fellowships in the Institute. During the tenure of their work in the Institute the scholars are paid fellowship which is adequate to cover their expenses. The Institute had rented a building in Saheed Nagar for their use as a hostel and now the Institute has its own hostel for them in the new campus.

Collaboration with other institutions has been undertaken in several ways. Formally the Institute has entered into collaboration agreements with the three universities of Orissa by which scientists from these universities can spend time during their vacations and those from the Institute can likewise visit their Departments. Physicists from Sambalpur and Berhampur University regularly come here during summer vacations and some of them have carried out investigations which have been published with Institute byelines. As mentioned earlier, the Institute hosted the National Symposium on High Energy Physics and organized two Symposia on Current Trends in Physics in collaboration with the Utkal University.

The Institute is an autonomous body and its governance is vested in a Board of Governors consisting of educationists and administrators from the State of Orissa, representatives of several central scientific agencies and some eminent physicists of the country. The Minister of Education, Orissa, is the chairman of this Board and the Director its Member-Secretary. The latter is the Chief executive of the Institute and responsible for its day-to-day running. He is assisted by an Administrative-cum-Finance Officer and an administrative and maintainance staff whose present strength is 30.

A well maintained and well-equipped library is an essential requirement of a research institution. We have been able to build such a library with lot of effort and care. It has 50 current international journals and periodicals with their complete sets of back volumes in addition to 3,700 highly selected books. Many of the journals are brought by air. More important than the journals are the preprints which are cyclostyled copies of manuscripts of papers sent for publication to journals. The Institute Preprint Service obtains these preprints from 10 different laboratories/institutions abroad through exchange arrangements with them. Preprints from other institutions are obtained through request after selection from Preprint Register issued by important research centres. These preprints enable institute scientists to learn about research work carried out abroad at least one year before these appear in journals. These are on regular display in the library and are filed after display with code numbers and catalogue card for each.

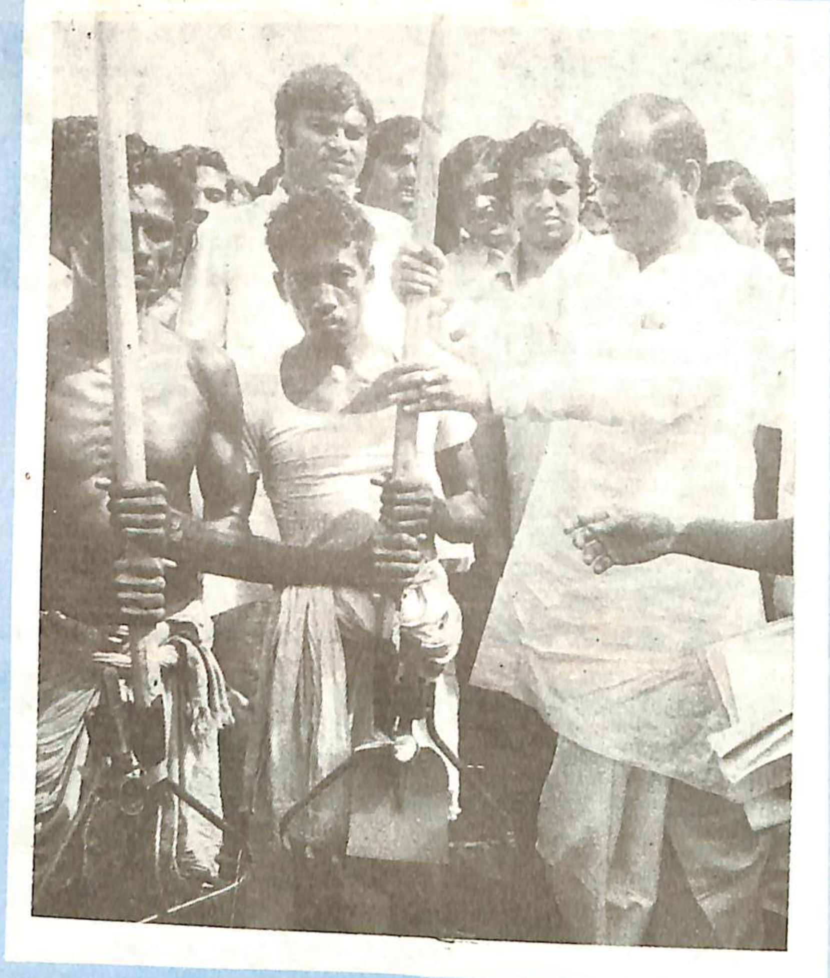
The Institute conducts regular colloquia and group seminars. These are held once every week. Both Institute faculty members and visiting physicists from other research centres in India and abroad deliver talks with the aid of slides and view graphs on topics of their current research interests. On an average 20 to 25 scientists per year have visited the Institute, delivered talks and held discussions with Institute Physicists. This kind of visits are very important for the growth of science in the country. Unfortunately on account of several social and economic factors this highly desirable mobility of scientists is very much lacking in the country. The Institute has plans to expand its visitors, programme by creating facilities for travel and accommodation of at least of 10 scientists at a time who would spend one week to one month in the Institute.

The Institute receives financial support in the form of grants-in-aid from the Orissa Government. It has recently started receiving grant-in-aid from the Department of Atomic Energy and projectwise-aid from the Depattment of Science and Technology of the Government of India. The latter aid was made available on the recommendations of an expert committee appointed by these two Departments which visited the Institute in February, 1979, to review its work and asses its needs. In its report the committee has highly commended the good work that is being done by the Institute scientists. In their words "The Institute, in a short term of four years since the first faculty was recruited, has achieved an outstanding starute in the fields in which research activities have been initiated and established." However, the quantum of aid that has been sanctioned on the basis of this report is very meagre. The total annual grant-in-aid from all sources is highly inadequate to run a specialised high quality research Institute which would be able to help in building a base for the sophisticated technology India has embarked upon. The present faculty strength and number of scholars have to be doubled to make the Institute a viable unit. The main building and the hostel need expansion to accommodate the laboratories and working space for the expanded staff. Residential accommodation in the campus is an acute necessity particularly when house rent in the town are sky-rocketting. Increase in annual grant-in-aid by at least twice the present amount and a one crore foundation grant for construction of buildings and quarters over a four year period would consolidate this newly established Institute and make it one of the finest research centres in the country. Let us hope that the blessings which our Prime Minister conferred on this Institute in her speach at the time of inauguration of its new campus will go a long way in this direction.

Director, Institute of Physics
Bhubaneswar, 751005

The Foundation-stone of Savitri Women's College, Bhanjanagar in Ganjam district was laid by Shri C. M. Poonacha Governor of Orissa on September 19, 1981

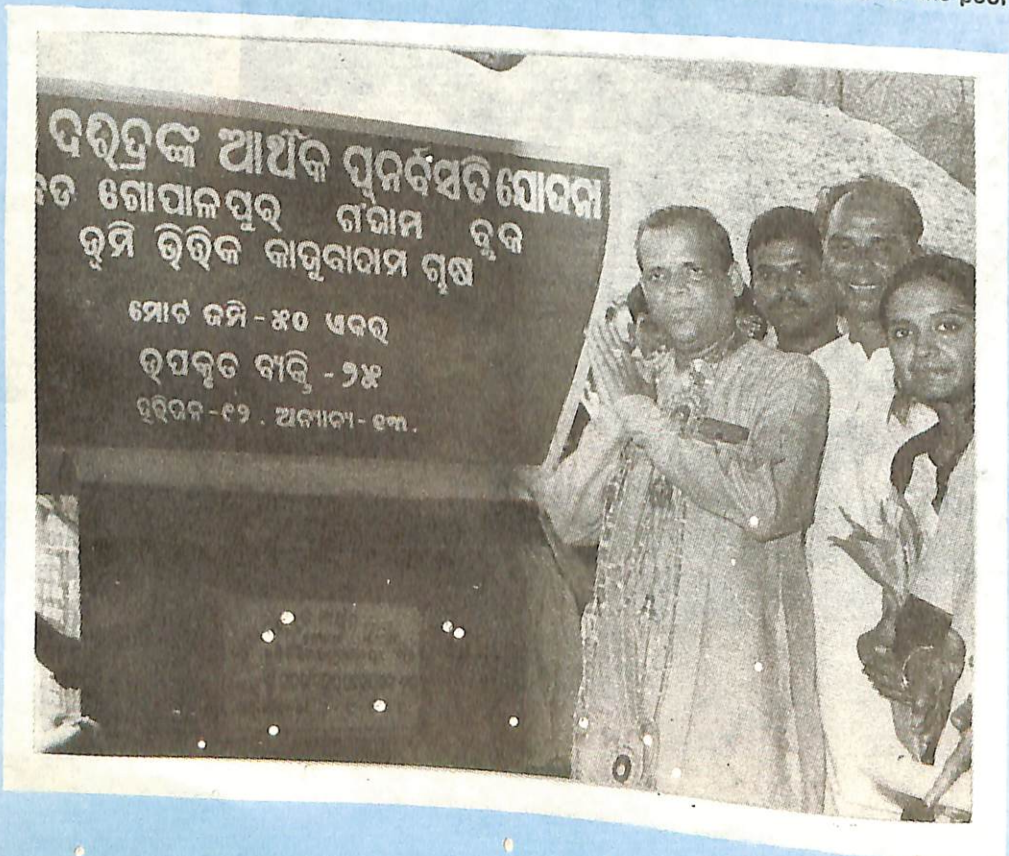
Shri G. Mohapatra, Minister for Education distributing the prizes to the winners on September 21, 1981



Shri J. B. Patnaik. Chief Minister of Orissa distributed agricultural equipments to the beneficiaries at Kandbhal in Sundargarh district on August 31, 1981 on E. R. R. P. Programme.

The new strategies in agriculture
Rather than the age-old practices;
Would make our land more productive
And contribute towards our prosperity.

Oh Lord ! instill courage in our hearts
And provide strength to our arms;
So that we are enabled to better the lot of the poor.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Shri J. B. Patnaik, Chief Minister of Orissa, inaugurating Cashew Plantation of E.R.R.P at Bada Gopalpur of Ganjam district on 7th September 1981.

Try to build yourself and stand on your own legs;
Money will not be a bar on the path of your progress.

The Government of the people, for the people and by the people;
Are morally bound to wipe out the scourge of poverty.

Revenue Minister, Shri Upendra Dixit, distributing consolidation pattas in village Olkana under Nimapara P. S. in Puri district on 26th August 1981.

The Diploma Award Ceremony of Gandharva Kala Parisad, held at Bhubaneswar on September 11, 1981

Shri J. K. Patnaik, Minister of State for Labour, Tourism, Sports and Culture giving away the prizes to successful artists.

Chief Minister of Orissa Shri J. B. Patnaik addressing as Chief Guest on the occasion of the Foundation Day Ceremony of Surajamal Saha Mahavidyalaya at Puri on September 13, 1981.

The Chief Minister at the O.U.A.T.

The 24th August, 1981 will remain a memorable day in the history of the Orissa University of Agriculture and Technology. Our Chief Minister Shri Janaki Ballav Patnaik was kind enough to visit this University and address staff, students and farmers on the occasion of the foundation day of the University.

Shri Patnaik also inaugurated the newly constructed "Communication Centre" of the University. This building has been constructed to produce various types of teaching materials for the farmers and extension workers of the State. At present two magazines namely 'Chasira Sansara' and 'Chasira Sathi' are being published and circulated among the farmers. Besides Package of Practices for major crops, leaflets, bulletins, research journals, posters are also regularly brought out based upon research findings of the university. The Communication Centre will undertake production of educational films, slides, display boards, models, etc. Further this centre will also despatch regular information to the Radio Station and T. V. Centre on latest technology on Agriculture, Animal Husbandry and allied subjects. The I. C. A. R. sanctioned a sum of Rs. 5 lakhs for the construction of the Communication Centre building

A get-together was held to celebrate the Foundation Day of the University. The Chief Minister graced the occasion as the Chief Guest. In his address he advised the scientists of the University to work hard in order to help increase agriculture production of the State. He said since 15 years, the agriculture production in the state 'has not increased as per expectation'. This standstill position should be removed and farmers must be helped with all possible technology to increase production like those of Haryana and the Punjab. He also assured that money would not be a problem and Government would sympathetically consider the demands of the University. He also advised the farmers to take advantage of the specialists of the University and extension workers and work hard in developing the economy of the State.

Earlier, Sri Basudev Mohapatra, Minister of Agriculture & Co-operation laid the foundation stone for a Farmers' Hostel and one Students' Hostel. Sri Basanta Biswal, Minister of State for Urban Development, Mines & Geology laid a foundation stone for another Students' Hostel. The Farmers' Hostel when completed will accommodate farmers and extension workers who will be coming to this University regularly for getting training on latest technology.

Indian Energy Scene

Prof. M. K. ROUT, D. Sc.

Energy crisis witnessed of late is, no doubt, a global phenomenon but its impact on developing countries like India has a far-reaching consequence. The spiralling prices of petroleum and petroleum products has virtually crippled economy of many countries, and has greatly impaired their development programme.

In the present article, in order to underline the seriousness and magnitude of the problem, I desire to set forth at the outset that our oil import bill which will be in the region of rupees four thousand crores during the current year is equivalent to more than 4 per cent of our G. N. P. There is a continuing increase in the price of oil coupled with uncertainty about its availability. Import of crude oil and petroleum products absorbs nearly seventy per cent of our foreign exchange earnings today. The economic consequences and the Political overtones should be anticipated in its total perspectives.

For a comprehensive analysis of this complex problem, I would like to divide my theme into the following broad headings—

I. Sources of Energy

II. Rise in Oll Price in 1973 and how the disaster was averted.

III. Increase in Oil Price in 1979 with its possible repercussions in light of previous experience.

IV. Observations of the President of India, Prime Minister of India and President, Indian Science Congress on the Energy Problem.

V. Report of the Working Group appointed by the Government of India on the Energy Policy.

VI. Discussion on various options in light of the World perspective.

VII. My own observations.

I. Sources of Energy :

(*a*) *Exhaustible Energy Sources*—also referred to as "Harder Technology". (*i*) Fossil Fuels (*ii*) Oil shale.

(*b*) *Renewable Energy Sources*—referred to latter as 'Softer Technology'. (*i*) Solar Energy (*ii*) Photo-voltaic cells (*iii*) Bio-Mass (*iv*) Geothermal Energy.

(*c*) *Nuclear Energy*—(*i*) Fission (*ii*) Fusion (*iii*) Uranium (*iv*) Phutonium (*v*) Light Water Reactor (*vi*) Phutonium Breeder Reactor.

II. Rise in Oil Price in 1973 and how the disaster was averted :

The increase in oil price in October, 1973 initially caused shock and consternation in view of the possible far-reaching disastrous consequences. In the opinion of Robert S. Mc Namara President, World Bank, India, Bangladesh and Sri Lanka were the worst affected. The full impact of the Oil price rise became clear only in 1974-75. India's Import Bill for petroleum and petroleum products increased from 240 million dollars in 1972-73 to 659 million dollars in 1973-74 and to 1360 million dollars in 1974-75. I shall now discuss how the shock was gradually absorbed and Indian economy was able to gradually regain the balance after discovering new strength—

(*i*) The "Bombay High" started giving dividends. India's oil production increased by over 70 per cent from 7·2 million tonnes in 1973 to 12·5 million tonnes in 1978-79. Exploration of new field and implementation of old projects whete expedited.

(*ii*) India opted for exploration operation in other countries on a production sharing basis. Such exploration work still continues in Iran and Tanzania. India has already earned 4 (four) million tonnes of crude oil as her share until now from Iran.

(*iii*) Experts to OPEC countries rose by 261 per cent from 216 million dollars in 1973 to 782 million dollars in 1976-77. The Development Programmes and the increased consumer expenditure in the OPEC countries boosted demand for the Indian goods.

(*iv*) Indian consultancy firms were offered a number of valuable projects in the OPEC countries, e.g. (*a*) Tripoli Power Project in Libya (*b*) a Housing complex in Dubai and (*c*) a Water Treatment Plant in Iraq.

(*v*) The OPEC countries also rendered financial assistance to India to establish industrial projects in this country. A typical example is the Kudremukh Iron-ore Project in Karnatak for which Iran has extended a credit of 630 million dollars.

(*vi*) Another striking development was ever increasing number of Indians highly skilled, persons like doctors and engineers, men in semiskilled vocations like Stenographers, Draughtsmen, Nurses and Carpenters going to Middle East Countries. They made substantial remittances adding to valuable foreign exchange. The Exchange Resorves of India dramatically increased from 0·8 billion dollars in 1975 to 4·7 billion dollars in 1977 and over per cent 7·00 billion dollars in 1979.

(*vii*) The flow of tourist from Iran and other Arab countries also increased by nearly 50 per cent during the last five years.

(*viii*) These very encouraging trends were consolidated by four successive good monsoons from 1975 to 1978.

This is how our country could absorb the shock, resulting from increase of oil price and the disaster was partially averted.

III. Increase in Oil Price in 1979 with its possible repercussions in light of previous experience:

Just when the country was in the final stage in the adjustment process of regaining the balance thrown out of gear in 1973 as a result of Oil price increase, there have been in effect an over 75 per cent increase in the effective OPEC oil prices since early 1979.

A new bottle-neck has also emerged in the supply of oil to our country following the stoppage of exports from Iran and also cut back in production in other OPEC countries.

Further in strange contrast to 1973, OPEC countries are now relatively hesitant about pledging financial assistance to India and other Third World countries which have been seriously affected by the latest price increase.

IV. Observation of the President of India, Prime Minister of India and President of the Indian Science Congress in 1980 by Professor A.K. Saha on the Energy Problem:

It is very much heartening that this problem is now receiving increasing attention in recent times. The *President of India*, while inaugurating the 67th Session of the Indian Science Congress on 1st February 1980, has appealed to the Scientists to "apply their minds" to the country's energy problems and find alternative sources within a reasonable time. The President said that India should add to the energy producing capacity based on—(1) Hydroelectricity, (2) Coal, (3) Nuclear energy. He also emphasised that conservation of energy should be the corner stone of the strategy in the vital and large sectors of Agriculture, Industry and Transport. He stressed that research relating fo mining, electrical equipments and methods of transmission of energy and its conservation should be vigorously undertaken.

Prime Minister Shrimati Indira Gandhi has observed as follows—

> "A crucial factor in technological development is energy. Other countries are experimenting in a big way in the uses of renewable sources. In the long run, hydel power, solar and bioenergy will be the principal forms of energy used in our country. The tapping of solar energy through three known methods, namely, photosynthesis, photovoltaic systems and photo thermal applications, can meet our energy needs. We are also using nuclear energy for this and other developmental purposes. Immediately, however, we must be very thrifty in our use not only of indigenous and imported petroleum products but even of coal. We have decided to establish a Commission for Additional Sources of Energy to advise us on energy policy and to draw up and implement programmes on alternative sources. This will give fresh impetus to innovative thinking."

> "The time has come when greater emphasis should be laid on deriving energy from the sun, wind and water. . . . We must now make urgent and all-out scientific effort to promote the development and utilisation of solar and other forms of renewable energy to reduce our dependence on fossil fuels and to help safeguard our environment."

> "Programmes such as 'a tree for every child', 'nutrition gardens', forest farming, the raising of energy plantations, organic recycling through the conservation and use of all waste products and the harnessing of renewable forms of energy based on sunlight, wind and biogas are all potentially valuable mass movements, provided they are formulated thoughtfully and implemented with the involvement of the local population".

Professor A. K. Saha, while delivering his presidential address, stressed that the energy question is the most serious amongst all other national problems and called for an immediate well-defined energy policy. He warned that the matter should not be allowed to drift. With regard to nuclear energy, he said that installation of a nuclear plant is expensive. Sophisticated Technical expertise is necessary to operate such plants. The effective life of a nuclear plant compares rather unfavourably with that of hydel or thermal plants. The radioactive waste creates environmental and ecological pollution hazards. There are no full safeguards against reactor disasters. He also said that doubts about our nuclear capability should not be brushed lightly. Uranium reserves in India are very meagre. If the country's energy policy is directed towards installation of more nuclear plants, then it is essential that 'breeder technology' using thorium, which is available in adequate quantities, should be developed. He was doubtful if nuclear energy can offer any help in the deepening crisis.

V. Report of the Working Group of the Government of India on "Energy Policy":

The Working Group on "Energy Policy" in its report prepared for the Planning Commission, has made two sets of demand forecasts after 2000 A. D.—a Reference level forecast and an Optimum level forecast.

The Optimum level forecast of energy demand for Coal, Oil and Electricity is as follows—

	1982-83 (In million tonnes)	2000-2001 (In million tonnes)
Coal . . .	150·4	427·2
Oil .	35·38	69·11
Electricity . .	155·2 Twh.	457·5 Twh.

In view of disruption of oil supply from Iran and stiff increase in oil price twice within a year, any energy formulation will have to start with the assumption that there cannot be any guarantee of steady oil supply in future.

The working Group has said that under the reference level forecast, the overall rate of growth of requirement of coal will be 7·79 per cent and of oil 5·6 per cent and of electricity 8 per cent a year. The working Group has said that it is neither desirable nor it would be feasible to step up the energy supply to these levels. They hava recommended that the demand for oil should be reduced te the maximum extent.

VI. Discussion on various options in light of world perspective:

The complexities of the energy dilemma have been analysed in the American Review Volume XXIII No. 2. Another article has appeared in American Review Volume XXIV No. 2 written by Stobaugh and Yergin. The article reflects the conclusions drawn by a mammoth six-year study contained in a book by Stobaugh and Yargin "Energy future-Report of the Energy project at the Harvard Business School". They have said that experts have been arguing for greater emphasis on the "Softer Energy Technologies" based on solar and biomass rather than on the "Harder Energy Technologies" basad on coal, petroleum and nuclear power.

I would like to discuss the two options "Harder Tachnology" and "Softer Technology".

(a) *"Harder Technology"*—Although "Harder Technologies" involve non-renewable sources and increasing environmental and pollution probiems, still the advocates of this alternative have faith that science and Technology will keep pace and will be able to sort out problems as and when they arise. They point out that close correlation exists between energy consumptions, G. N. P. and economic welfare and they are opposed to the idea of any reduction in consumption of fossil-fuel energy and other "Harder Technologies", because, in their opinion, such an attempt would have an adverse impact on world prosperity. The protagonists of this opinion pin great hopes on the developments of nuclear energy. Dr. Raja Ramanan, one of India's foremost nuclear scientists, considers that nuclear power is the only answer to the energy problem of the World and India.

(b) *"Softer Technology"*—Which involves renewable sources such as solar and biomass.

Advocates in favour of the "Softer Energy Technologies" press forward the following reasons—

(*i*) The non-renewable sources are, after all, a stock of energy capital, whatever be the estimates of world reserves. The renewable sources such as solar and biomass are a flow—energy income.

(*ii*) The present energy systems based on "Harder Technologies" are highly centralised and capital intensive. They also rasult in considerable wastage.

(*iii*) Renewable sources "Softer Technologies" can be more easily tapped to meet rural needs.

(*iv*) The "Softer Technologies" are relatively more employment intensive process.

(*v*) The "Softer Technologies" also involve much less environmental and ecological hazards,

(c) *Programmes undertaken by United Nations, Germany and France on "Softer Technologies.*

(*i*) The United Nations Environment Programme has undertaken to set up two Regional Energy Centres in Africa and Asia to serve as demonstration units to encourage developing countries to use "energy mix" of solar energy, wind power and biogass to meet the requirements of rural communites with a population of one thousand or so.

(*ii*) West Germany is now engaged in collaborative solar energy projects in Egypt, India, Iran, Jordan, Maxico and Nigeria with the object of developing low-cost energy technologies. Attempts are also being made to manufacture equipments which can be easily produced and also easily operated.

(*iii*) France is subsidising the marketing of a solar irrigation pump throughout the Third World.

VII. My own observations :

1. I shall first discuss about *'Utilisation of Solar Energy'*. About Solar energy it is mentioned in the Rig Vade as follows:

> "Let the world focus its constant attention at the centre of the planetary system where the Sun, the supreme power of the universe, resides."

"India has a signficant level of solar insolation over wide regions. The total solar energy received by our land mass annually is about 60 × 1013 M. W. H. There are between 250—300 days of useful sunshine per year in most parts of the country. Over 3000—3200 hours of bright sunshine are received every year over Rajasthan, Gujarat, West Madhya Pradesh and North Maharashtra and 2600—2800 hours over the rest of the country, except in Kerala, Assam and Kashmir where they are appreciably lower.

During the year as a whole, more than 2000 kwh/m^2 global solar radiation is received over Rajasthan and Gujarat, while East Bihar, Bengal and Assam receive less than 1700 kwh/m^2. The annual pattern of diffuse solar radiation shows a minimum of 740 kwh/m^2 over Rajasthan, increasing eastwards to 840 kwh/m^2 in Assam, and to 920 kwh/m^2 in the extreme south of the Peninsula. During the dry months of the year, the maximum direct solar radiation exceeds 200 kwh/m^2 over Rajasthan, Gujarat and north Maharashtra, the values steadily decreasing both eastwards and southwards, with a marked decrease over the entire country during the monsoon months. The daily average direct solar radiation at places in the central part of the country is between 5-7 kwh/m^2. Solar energy is available abundantly; it is renewable; it poses no major environmental threats. However, solar energy is diffused and intermittent, and therefore, requires appropriate collection and storage systems.'

Solar Energy is tapped through three known methods: Solar Thermal systems, Solar Photovoltaic Systems and Photosynthesis.

Solar Thermal Systems include Solar Cookers, Solar stills, Solar Water heating systems, Solar crop dryer, Solar Cold Storages Solar pumps, Solar power plants.

Two concepts of Solar power plants—Farm concept and Tower concept are now receiving increasing attention.

Solar Photovoltaic Systems—The concept of producing electricity directly from sunlight without transforming it into heat and mechanical energy is based on Photovoltaic effect.

Extensive researches on utilization of Solar Energy are being done on the above lines. These efforts hold out rich promise.

Incidentally I desire to mention another interesting point. It is said that even if one per cent of solar heat in Rajasthan can be tapped for useful work, the energy output will be equivalent to twice the total quantity of electricity produced in India. But the research work to perfect the technology may require billions of rupees which our country cannot afford. Assistance from developed countries with regard to capital and technical know-how is, therefore. absolutely essential.

2. *Utilisation of Wind Energy*—Wind mills can compete favourably with diesel pump sets if the total cost incurred on their operation are compared over five to ten years of their period of operation.

There are at least 2-3 million open mills which are yet to be motorised. Even if 25 per cent of these are located in reasonably windy areas, the scope for small pumping wind mills will be quite significant.

3. *Biomass*—Let me quote what is said of Bioenergy in Atharva Veda.

> "What of thee I dig out, let that quickly grow over. Ler me not hit thy vitals, or thy heart."

In India where agriculture and forest resources are immense, use of biomass as a source of energy has high potential.

In view of the rich promise which the development of Bio Gas Plants technology holds out, and the possibility that with the installation of such plants in large numbers, the demand for Kerosene can be virtually eliminated in our country, this right potential should be quickly exploited, by perfection of the technology. In U. S. A., energy from Bio Mass (organic matter from plants and animals) is one of the major components of the Energy Strategy. This potential can also be augmented through the dvelopment of fast growing energy crops. It is said that for each tonne of food grain produced, one and a half tonne of grass is produced. Each tonne of grass can yield energy equivalent to half a tonne of coal. In India, the food grain production, being over 120 million tonnes, can be considered equivalent to an energy source nearly 90 million tonne of coal equivalent. But huge capital will be required for research and development to perfect this technology.

4. *Small Hydro Power*—Although accurate assessment is difficult, it is considered that the mini, micro-canal drops and other probable low head developments in the country provide a hydro potential equivalent to an annual energy generation of about 25 TWH.

Considerable emphasis should be given on hydro power, since the technology for its greater utilisation is already available.

5. *Integrated Energy Projects*—I am glad that integrated energy systems are being developed, Electricity supplied through a grid is not only more expensive but it is also not suited to meet the specialised demand requirements in the household, agriculture and small cottage industries in the villages.

I am glad that the integrated energy systems now developed take into account all facets of the decentralised rural energy problem and for any given location are based on an optimum matching of the needs with energy availability, particularly renewable sources.

6. *Nuclear Energy—My views*—The observations of Dr. Saha, President. Indian Science Congress favouring shift to "Softer Technology" and his doubts about the country's nuclear capabilities have come in for a good deal of criticism in some newspapers, specially the 'Statesman' which has commented in its editorial as follows:

Referring to Dr. Saha's observation, the 'Statesman' says "This is unfortunate, especially since the nuclear programme has already suffered considerable damage for official neglect and policy uncertainties. It is easier to subvert a programme than to develop it and one easy subversive method is to suggest that an alternative has limitless promise." As already mentioned earlier, Dr. Raja Ramanna, one of India' s foremost nuclear scientists, considers nuclear power as the only answer to the energy problem of the world and of India. My personal thinking on this subject is that Research on 'Breeder Technology' based on thorium which is available in India in adequate quantities should receive attention on a priority basis and once that is accomplished, there should be no objection to the installation of power plants, Nuclear plants contribute larger proportion of the total power output in many developed contries even in spite of their environmental and ecological hazards, Nuclear power in India has not developed to the extent which will warrant thinking seriously of resulting pollution hazards.

7. *The pattern of growth in the industrial sector* has now to be re-structured. Research has to be intensified to find out alternative technologies involving less energy requirements in the very high electricity consuming industries like Aluminium and Ferro-silicon, etc.

8. Research on the *production of electricity* from inferior grade coal should be undertaken more vigorously.

9. The drive for *Oil-exploration* should be accelerated. Lastly, I expect that the Developed Countries like U. S. A., U. K., etc. who have the requisite capital and the requisite sophisticated know-how would conduct extensive research into the

renewable resource base for different areas in India and the Third World, and also should develop the appropriate equipment for tapping these resources. Industrial world itself would stand to benefit immensely from such research. As already mentioned earlier, some welcome initiatives have already been made by the United Nations, West Germany and France, but the situation now demands a much more comprehensive programme on an extensive scale so that a major break-through in "Softer Technology' can be achieved in the quickest possible time.

The writer is grateful to Dr. S. P Rout, Department of Chemistry, Ravenshaw College, Cuttack for his kind help in preparation of this article.

* * *

"This is the gist of all worship to be pure and to do good to others.

The calmer we are and less disturbed our nerves the more shall we love and the better will our work be.

When you are doing any work do not think of anything beyond. Do it as worship, and the highest worship, and devotes your life to it for the time being".

—*SWAMI VIVEKANANDA*

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DISTRICT SUNDARGARH, ORISSA

Development of Chromite Resources of Orissa

Shri BASANTA KUMAR BISWAL
Minister of State
Works, Housing & Urban Development
and Mining & Geology, Orissa

Due to its use in production of stainless steels and applications for chromium plating, chromite has become indispensable in development of any modern industry. Uses of chromium cover a very wide range from domestic appliances to sophisticated weaponry used in modern warfare. Nuclear reactors and all space crafts use chromium in some form or other.

South Africa, Zimbabwe. Turkey, Albania, Philippines, and India are the principal producers of chrome ore in the world. In India, over 90 per cent of the total deposits of chrome ore occur in Sukinda Valley of Cuttack district and Boula-Nausahi area of Keonjhar district in Orissa. In 1975, the total Indian reserves were estimated at 17 million tonnes, of which Orissa accounted for about 15 million tonnes. As a result of a massive exploration programme implemented jointly by the Geological Survey of India, State Directorate of Mines, Mineral Exploration Corporation and the Orissa Mining Corporation during 1977—1981, there has been phenomenal increase in the estimated reserves particularly in Sukinda Valley, where 110 million tonnes of chromite of different grades have been established. India, which was deficient in this strategic ore, is now placed in a very comfortable position.

India has been a traditional exporter of high grade chrome ore fines to Japan. Export of chrome ore touched the peak in 1975 when the total exports from Orissa were 3·36 lakh tonnes. The export price also had touched an all time high of U. S. S. 140·00 per tonne f. o. b. t. Paradip Port. Several factors led to sharp decline in exports in the following years and the recession still continues. An imortant reason for decline in demand for Indian chrome ore and sharp fail in export prices is emergence of Philippines as an important producer. Philippine ore could be delivered in Japan at a comparatively cheaper price because of freight advantage. Export from Zimbabwe which was stopped due to economic sanctions imposed by U. N.. resumed following a change in the political status of the country. Chrome ore produced in Albania became available to the European consumers following closure of their traditional Chinese market. Government of India increased export duty from Rs. 15·00 to as much as Rs. 200 per tonne on high grade chrome ore fines while the export prices continued to show downward trend and fell below U. S. S 100. In order that Indian chrome ore could again become competitive in the international market, export duty has to be fixed on a rational basis. Fortunately Government of India have appreciated the need to fix export duty on an *advalorem* basis.

The internal demand for chrome ore is confined to production of chemicals, refractories and ferro-chrome. There is not likely to be any sharp increase in the consumption pattern in these areas during this decade. In the export market, the initiative now is some how with other countries. We can hope to restore the quantum of exports to 1976 level or at best we can step up exports to the level of 500,000 tonnes per year.

Due to steep increase in the prices of petroleum products our import bill has been mounting year after year. It has bacome necessary to take urgent steps to step up exports to improve our balance of payments position. Chrome ore constitutes an important foreign exchange earner for our country. Apart from exporting chrome ore fines in raw form, our efforts should be to promote export of minerals and ores in processed form so that our foreign exchange earnings would be substantially more. Chrome ore available in Orissa is mostly in the form of fines, which have got limited market in the country. Export market is also limited. Therefore we have to seek alternative means to utilise the vast resources of chrome ore fines with a view to increasing our revenue, providing employment and above all earning additional foreign exchange for the country. It is in this context that Orissa Mining Corporation Ltd. decided to set up a Charge Chrome Plant of 50,000 tonnes annual capacity. The main considerations which weighed in favour of this decision are :—

(1) utilisation of chrome ore fines of low and medium grades, which have no market abroad or within the country;

(2) conservation of mineral resources;

(3) increasing the production of chrome ore by about 1·20 lakh tonnes per annum and consequent generation of additional revenue and employment.

(4) export of value added item and earning around Rs. 25 crores in foreign exchange per year;

(5) development of a backward area of the State.

(6) charge chrome is now being increasingly used in production of stainless steel in preference to the high priced, high carbon and low carbon ferrochrome, Therefore, the trend throughout the world is for installation of new capacities for production of charge chrome rather than the conventional high-carbon ferrochrome,

As technology for production of charge chrome is not available in the country, O. M. C. had to look for an appropriate and commercially established technology from abroad, keeping in view utilisation of 100 per cent chrome ore fines as feed material. As availability of power is going to be scarce in the years to come, the process which involves minimum consumption of power had to be adopted. As the process developed by M/s. Outokumpu Oy of Finland satisfied all these parametres, the O. M. C. Ltd. decided to adopt their process in the plant to be set up near Bamnipal in Keonjhar district.

M/s. Ferro Alloys Corporation Ltd., a private sector Company have also gone ahead for putting up a 50,000 tonne Charge Chrome Plant near Bhadrak on the basis of a different technology. This will result in increase in production of chrome ore by 1·2 million tonnes per year from the Boula mines in Keonjhar district. There is possibility of yet another plant of 50,000 tonne annual capacity coming up in the private sector. For utilising ore containing less than 40 per cent Cr_2O_3 and which we must do in national interest, large scale beneficiation will be necessary. A Beneficiation Plant is being set up by F. A C. O. R. near their mine at Boula for this purpose. O. M. C. will also set up a beneficiation plant in the Sukinda Valley.

Orissa supplies almost the entire requirements of chrome ore for the Chemical Plants located in different parts of the country. There has been some progress to set up Chrome Chemical Plants in the State. The one being set up by ORICHEM near Talcher is expected to go into production shortly and a couple of plants which are under construction are likely to be commissioned sometime during 1982.

Nickel, which is an important ingredient of stainless steel, occurs in the Sukinda Valley along with chrome ore. The reserves are assessed at about 100 million tonnes, of which about 30 million tonnes contain 1·2 per cent nickel and can be commercially exploited for production of nickel. Government of India have taken steps to revive the proposal of establishment of a nickel plant in Sukinda area on the basis of an imported technology. As both nickel and charge chrome are the two main ingredients of stainless steel, it would be logical to consider from now proposal for establishment of a stainless steel plant in the vicinity of the charge chrome plant.

The possibilities discussed above would indicate a bright prospect for development of the chrome ore resources of Orissa during the current decade. The State is now producing 2·6 lakh tonnes of chrome ore. On completion of the projects taken in hand and assuming exports at 1975 level, the annual production will go up to about 8 lakh tonnes five years hence and the State's revenue from royalty and cess alone would amount to Rs. 5 crores. The country will earn over Rs. 70 crores equivalent in foreign exchange per year from export of chrome ore and charge chrome. A number of technical personnel will find employment in the mines and the plants. Besides the projected increase in production of chrome ore will provide additional employment to about 1,500 Tribal persons in mining operations alone.

* * *

- ସ୍ୱାର୍ଜିତ ଜ୍ଞାନର ପରିସର ପରିବର୍ଦ୍ଧିତ ଓ ପରିମାର୍ଜିତ କରିବାପାଇଁ ବିଭିନ୍ନ ସ୍ଥାନ ପରିଭ୍ରମଣ କରିବା ଏକାନ୍ତ ପ୍ରୟୋଜନ । ଛାତ୍ର ଜୀବନରୁ ହିଁ ଏହାର ଶୁଭାରମ୍ଭ ହେବା ବାଞ୍ଛନୀୟ ।

- କଲା ଓ ଭାସ୍କର୍ଯ୍ୟରେ ଉତ୍କୃଷ୍ଟ ଦେବଦେବୀ ମନ୍ଦିରଠାରୁ ଆରମ୍ଭକରି ପ୍ରାକୃତିକ ଦୃଶ୍ୟ ପରିପୂର୍ଣ୍ଣ ସବୁଜବନାନୀ ପର୍ଯ୍ୟନ୍ତ ଓଡ଼ିଶାର ଅସଂଖ୍ୟ ଦର୍ଶନୀୟ ସ୍ଥାନ ଆପଣଙ୍କୁ ସ୍ୱାଗତ କରୁଛି ।

- ସବିଶେଷ ବିବରଣୀ ଓ ପରିଭ୍ରମଣର ସୁବନ୍ଦୋବସ୍ତପାଇଁ ନିଜ ଜିଲ୍ଲାର ପର୍ଯ୍ୟଟନ ଅଧିକାରୀଙ୍କ ସହିତ ଯୋଗାଯୋଗ ସ୍ଥାପନ କରନ୍ତୁ —

ନିର୍ଦ୍ଦେଶକ
ପର୍ଯ୍ୟଟନ ବିଭାଗ
ଓଡ଼ିଶା, ଭୁବନେଶ୍ୱର

Shri Jagannath Sanskrit University

Prof. PRAHALLAD PRADHAN

Shri Jagannath Sanskrit University fulfils the long cherished hopes and aspirations of the Sanskrit loving people of Orissa and outside. Established after the name of Lord Jagannath in holy town of Puri, which is internationally famous as an age-old seat of Sanskrit learning and culture, this University is the third of its type in the whole country, next only to Sampurnananda Sanskrit University, Varanasi and Kameswar Singh Sanskrit University, Darbhanga.

Before independence, the national aspirations had quickened the desire for national education, and the traditional Sanskrit learing was recognised to have embodied some permanent and universal elements of the same. After independence it was considered necessary to establish a few 'oriental universities' in the country. The Sanskrit Commission, which was established in 1956 under the Chairmanship of Dr. Suniti Kumar Chatterji, examined the traditional system of Sanskrit Education in order to find out suitable features for building up a modern Sanskrit University.

The Sanskrit Commission outlined three types of oriental universities, namely (*a*) a full-fledged modern type of university consisting of all faculties, including Science, with Sanskrit as the medium of instruction; (*b*) a university providing for instruction in all branches of Humanities, mainly Sanskritic, comprehending the corresponding development in modern thought; and (*c*) a teaching-*cum* affiliating university to be set up as the apex of the *pathashala* system. After due consideration the Commission recommended the third type as the most suitable. Such a university is designed to conduct examinations, upgrade and modernise the standard of teaching, impart instruction at the higest level and promote research. Shri Jagannath Sanskrit University is set up with these objectives.

Through ages Orissa in general and Puri in particular have been the home of Sanskrit learning. Sanskritic writings in Orissa commenced with the epigraphic inscriptions and records of land grants dating from the sixth century A. D. The output in Sanskrit developed into literary forms in the eighth century A. D. The tradition reached its culminating point in the medieval period, but it still continues uninterrupted. Innumerable palm leaf manuscripts of various texts are found in the nooks and corners of the State. The number of manuscripts in the Orissa State Museum alone is estimated at 35,000 out of which about 20,000 are reported to be in Sanskrit. Such vast treasures of learning call for scholarly exploration.

The contributions of Orissa to Sanskritic scholarship are too well—known to be given in detail. It was in Orissa that Sayanacharya's commentary on Shukla Yajurveda, long since considered as lost or non-existent, was found out. The Pippalada branch of the Atharva Veda, which was also considered as missing was recently discovered in a manuscript from a village near Nimapara in Puri district. These facts testify to the remarkable Vedic tradition of

Orissa. Again, from among the Upanishads, the *Angirasa Kalpasutra* was also found in Orissa. The distinctness of the Tantric tradition of Orissa is frequently referred to in the Tantric literatures of Bengal and Assam. Among the celebrated Tantric scholars of Orissa are Bhavadeva, the *guru* of King Udyotakeshari, known for his work *Tantrarnava* Godavara Misra, author of *Tantrachintamani,* Ramachandra Udgata, writer of *Tarini-kula-sudha-tarangini,* etc., The Puranic literature of Orissa includes such valuable works as *Ekamra Purana, Swarnadri Mahodaya, Niladri Mahodaya, Kapila Samhita,* etc. Special mention should be made of two significant volumes under the name *Utkala Khanda* annexed to the *Brahma Purana* and the *Skanda Purana,* which dwell upon the uniqueness of Orissa as part of India.

In the realm of Dharma Shastra our contribution is significant. Noteworthy among the scholars are Sambhukar Vajpeyi, the writer of *Vivaha-Paddhati* and *Shraddha-Paddhati :* his son Vidyakar, the author of *Nityachara-Pradeepa :* Sankhadhara whose famous *Smriti-Samuchchaya* is followed in Mithila and Bengal ; the well-known Gadadhar Rajguru of *Gadadhar-Paddhati* fame and many others.

Viswanath Kaviraj, the author of *Sahitya-Darpanah* and Markandeya Misra, the writer of *Prakrit Sarvaswa* are all India figures. The former belonged to Veer Harekrishnapur and the latter to Veer Narasimhapur, two villages near Puri, Sreedhar Swami, the renowned commentator of *Srimad-Bhagavat,* and Baladeva Vidyabhusan, author of the *Govindabhasya* commentary on the Brahmsutra came from this land.

In poetry and drama Orissa's contribution is simply dazzling : Bhatta Narayana's *Veni Samhara,* Murari Misra's *Anargha Raghavam,* Krushna Misra's *Prabodha-Chandrodaya Natakam* and Jayadeva's *Geeta-Govindam* these are unparallelled. The latter works like Jeevadevacharya's *Bhakti-vaibhavam,* Dibakar Misra's *Bharatamrita Mahakavyam,* Basudeva Praharaja's *Raghava-Yadaveeyam,* Braja Sundar Patnaik's *Sulochana Madhava Mahakavyam,* etc., go to prove the richness and continuity of the tradition. It will amount to stressing the obvious if we add to these the list of compositions in Ayurved, Jyotish shastra, shilpa shastra, so on and so forth. Suffice it to say that Orissa has had an illustrious Sanskrit tradition of its own.

In fact, traditional sanskrit education plays an important role in Orissa. In December, 1980, for instance, there were 143 Tols recognised by the State Government out of which 17 were of the Acharya standard, 32 of Madhyama grade and the remaining 94 of Prathama grade. There were six full-fledged Sanskrit colleges including one-managed by the Rashtriya Sanskrit Sansthan, Ministry of Education, New Delhi. With such a classical background, Orissa has always looked forward to the establishment of a Sanskrit University.

In 1955, a Committee was constituted under the Chairmanship of Shankaracharya Bharatikrishna of Puri to consider the question. The Committee which had many eminent educationists among its members recommended the establishment of a Sanskrit University after the name of Lord Jagannath at Puri. Shri Radhanath Rath, the then Education Minister presented a memorandum to this effect to the Sanskrit Commission. The Commission also heard many eminent educationists like Chintamani Acharya, the then Vice-Chancellor, Utkal University, Dr. Surendranath Acharya, President, Sanskrita Viswa Parishad, Pandit Neelakantha Das, Dr. Harekrushna Mahatab, Dr. Artaballabha Mohanty, Dr. Karunakar Kar, and others. But, it seems, the time was inopportune and the aspirations remained unfulfilled. In 1971, efforts were renewed by the lovers of Sanskrit, who had prepared a draft bill, but nothing tangible came out. It is indeed a matter of pride and happiness that the present Government decided to bring about the realisation of the long felt hopes and aspirations of the people.

The State Government set up a Committee on 6th August 1980 to study in depth the question of advancement of Sanskrit learning and work out the details of a scheme for the establishment of a teaching-*cum*-affiliating Sanskrit University in the State. The Committee was headed by Prof. Prahallad Pradhan and included among its members the Director of Rashtriya Sanskrit

Sansthan, Dr. R. K. Sharma, the Vice-Chancellors of Sampurnananda and Kameswar Singh Sanskrit Universities, Dr. Badrinath Shukla and Dr. Jaymant Misra respectively. Prof. Trilochan Misra was the member-Secretary. The Committee submitted its report and the scheme to the Chief Minister on January 9, 1981. Government with help of an Ordinance which came into force, with effect from 7th July 1981 established Shri Jagannath Sanskrit University at Puri.

All lovers of Sanskrit will remain grateful to Shri Janaki Ballav Patnaik, Orissa's Chief Minister and his Government for the timely decision they have taken in establishing the Sanskrit University. Examplary is the patronage of the Chief Minister. A year ago, on the 7th July 1980 in a meeting of the Sadasiv Kendriya Sanskrit Vidyapeeth he had assured the audience that he was taking steps regarding the foundation of the Sanskrit University. Exactly one year after on 7th July 1981 he was able to lay the foundation stone of the new University. A plot of 75 acres in Balukhand to the east of Puri town adjoining the proposed marine drive has been demarcated as the site. To the north the Raiiway line, to the south the sea—potentially the campus is lovely, with scope for expansion on the eastern side. The inauguration ceremony was held the same day in the Hall of S. C. S. College in the midst of hopes and cheers. Shri Gangadhar Mahapatra, the Education Minister welcomed the guests, the Chief Minister plesided over the function and Shri C. M. Poonacha, Governor inaugurated the new University. The third Sanskrit University thus came to function.

A Sanskrit University is not exactly a traditional examination-conducting body; nor is it the duplication of a modern University. It has its own features. Sanskrit education is distinguished by its emphasis on moral values; personal relationship between the teacher and the taught; intensive study leading to life-long learning or continuous education, and analytical approach to study. While Shri Jagannath Sanskrit University should aim at these permanent features of traditional Sanskrit education, it should also imbibe the best features of a modern University. The education imparted should be comprehensive, broad-based and close to the life situations. The curricula should be updated by the inclusion of modern subjects of suitable standard like History, Economics, Political Science, Mathematics, etc., so that the products of the Sanskrit University should have the same utility as their counterparts from other Universities. This is a most basic question. With the updating and upgrading of standard in Sanskrit education, the job opportunities for the products of the new University should be the same as those the products of the general Universities. In fact, the successful students of Sampurnanand and Kameswar Singh Sanskrit Universities are already competing with the students of the general Universities of Uttar Pradesh and Bihar.

The Sanskrit University should not be a place for learning Sanskrit only. In it the study of Sahitya will extend to the study of other languages and literatures too. Study of Vyakarana will include modern linguistics. In the same manner, study of Purana and Darshana and Dharma Shastra will extend to the learning of modern History, Indian culture, comparative religion, Jagannath cult and so on. In fact, Pali and Buddhism, Prakrit and Jainism can take us away from the narrow limits to the culture and history of countries like China, Japan and the far East. In the same way study of European languages and literature will bring our students closer to those countries. Conversely scholars from outside may flock to the new University for the study of Sanskrit and Indology. In real sense of the term will the University then become a universal centre of learning.

This year Shri Jagannath Sanskrit University has started functioning with its office in the premises of tne Raj Bhavan at Puri. For this timely accommodation we are grateful to the Governor, the Chief Minister and the Education Minister for their kind patronage. In its first meeting the Syndicate has decided to introduce, with effect from the current session, teaching in the following six subjects, namely, Dharma Shastra, Sahitya, Vyakarana, Sarvadarshana, Vedanta and Nyaya. Applications both for admission of students and appointment of staff have been invited and the response is enthusiastic.

In some quarters there is a feeling already expressed that research should have come prior to teaching. Post-graduate teaching serves as a basis for research; at the same time it helps consolidate from above the over all standard. For research we need the Library and the suitable staff for giving guidance, and we look to these problems while organising the P.-G. teaching departments. The next step is to go in for promotion of research.

The new university is now on its feet; it has to break a lot of ground ahead. It has to admit the existing Sanskrit institutions to its privileges; improve the standard of instruction; conduct the common examinations; consolidate the teaching; set up the general library and the manuscript library; promote research and honour the eminent Pandits and Scholars. And it has to build its own home and strengthen itself.

Without support of Government, the baby university cannot thrive. We hope that the patronage of the Chief Minister, who is himself a Sanskrit scholar will help this university in getting recognition of the Inter University Board and the assistance of the University Grants Commission in time. Above all, the University counts upon the grace of Lord Jagannath and the good will and co-operation of the general public.

* * *

Oh my daughter, do not feel
That thou art profane
The State is conscious ever
Of the poorest of the poor.

It is not green revolution
That matters alone.
What provides a new avocation to our villagers
Is called white revolution.

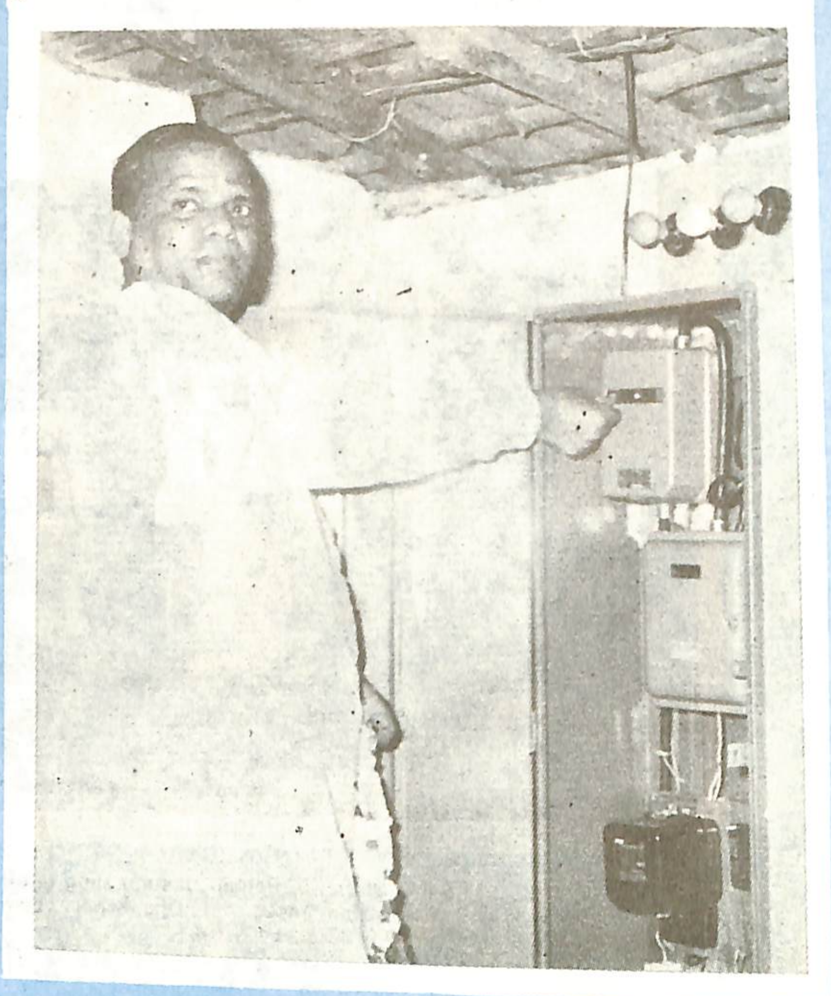
Chief Minister Shri J. B. Patnaik visited Milk Producer's Co-operative Society (Under E. R. R. P. Programme) at Kandbahal in Sundargarh district on August 31, 1981.

Three Engineers of Orissa were honoured by Shri Niranjan Patnaik, Minister of State for Irrigation & Power for their distinguished service to the State on September 15, 1981

Viswakarma Puja in Orissa Government Press

Chief Minister Shri J. B. Patnaik, inaugurating Lift Irrigation Project at Balaramprasad in Dhenkanal district on August 12, 1981.

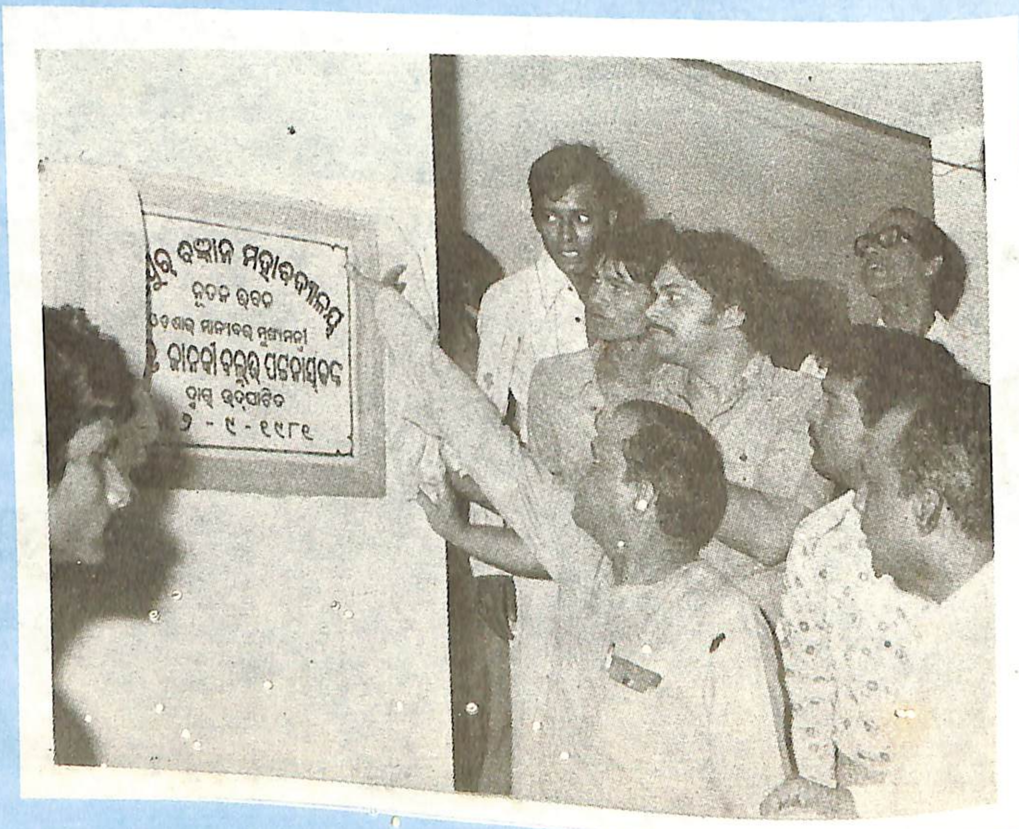
Finance Minister Shri Raghunath Patnaik addressing the Seminar on Contract and Arbitration in



Shri J. B. Patnaik, Chief Minister of Orissa inaugurated 25 energised L. I. point at Gariamal in Sundargarh district on August 30, 1981.

Power that provides the key to agricultural development
Will now enable us to grow more.

The new technology with the age old wisdom
Would lead us step by step
In our path of progress.



Shri J. B. Patnaik, Chief Minister of Orissa, inaugurating the Science Building of Chatrapur College on 7-9-1981.

The dawn in the Orissan Epigraphy

Dr. S. N. RAJGURU

The most reliable source of information which feed our history is deduced from epigraphical accounts. Orissa formed a part of the ancient country of Kalinga on the East-Coast which played a vital role in the annals of Indian culture. The geographical situation made her a great prosperous country for the reason that she happened to be the meeting place of several races of India and abroad including different types of culture, language and religion. Kalinga's commercial activities and contact with Ceylon, Indo-China, Combodia, Thailand, Java, Bali, Bornio, Japan, etc. Islands through the sea brought her not only prosperity and wealth but also cultural advancement in every sphere of life.

The waves of Brahmanism, Jainism, Buddhism flooded Kalinga where a great tyrannical Emperer like Chandasoka surprisingly turned to a pious follower of *Ahimsa* showing his meritorious deed in propagation of Buddhist principles of purity that was ever remembered in all countries. The culture of Kalinga again brought to her fold, some great canonists like Baudhayana and Apastambha*. of Vedic Religion and Dharmakirti of Buddhism**.

Asoka's Rock Edicts at Dhauli and Jaugada on the barks of the Daya and the Rushikulya respectively, open the history of the 3rd century B. C. that commenced immediately after the memorable Kalinga-war.

About a couple of centuries after Asoka was born Kharavela, a great ruler of Chedi Dynasty of Kalinga, whose Hatigumpha inscription in the Udayagiri Hill renders a clear picture of the great heroism displayed by the wariors of this country who exhibited strength and strategy by winning victories in all parts of India i. e., from Punjab right upto the Pandyan territory. Maharaja Kharavela also displayed his activities and skill in music, dance, art and architecture, irrigation, religion, apart from military successes. He subjugated Magadha and Andhra by defeating Vrihaspati Mitra and Satakarni respectively.

✓After Kharavela, a dark period ensued in the history of Kalinga, although a few minor stone inscriptions have come to our view. During that period, some foreign races like the Sakas, Kushanas, Murandas etc., captured this country, for which reason a large number of copper coins, bearing the usual emblem of the Sakas and Kushans have been discovered in the districts of Ganjam, Puri, Cuttack, Balasore and Mayurbhanj. The Sakas who used the title of "Devaputra" were subsequently defeated and expelled by the Gupta-monarch, Samudragupta. In Orissa, a contemporary king of the Serpent race *(Naga-vamsa)* named Satrubhanja, son of Manabhanja, as stated in a stone inscription, has defeated the " Devaputras " (Sakas) in some battles, where-after he got the title of "Satasura" (hundred-fold-hero). Satrubhanja was a great scholar who mastered the Hindu *Darsana* (philosophy) including *Veda*, *Purana* and *Vijnana*

**Indian Antiquary*, Vol. XLI (1912), P. 230

***J. R. A. S.* (N. S.) Vol. VII, P. 219

(architectural skill). He was a devotee worshipper of Siva; but never neglected the intersts of the *Nirgranthikas* (jainas) and *Parivrajakas* (Baudhas). He travelled over many East-Indian territories where he donated huge amount of wealth.*

While North-Orissa was under the Nagavamsikings at "Vindhyatavi", Samudragupta's invasion took place in the South where he defeated many minor kings and consolidated the country of Kalinga into a single kingdom. Immediately after his expedition the Matharas started their own sovereignty in Kalinga. Their capital was located at Simhapura which has not yet been correctly identified, although it was not far from the Mahendra mountain.

The brahmanas who occupied a high position in the society in the times of Asoka and Kharavela, lost their ethnic character when the racial admixture took place in this country in the Kushan regime. They changed their profession from the priesthood to cultivation, which was the profession of the Vaisya class. It is interesting to state here that according to the *Manava-Dharmasastra,* a brahmana is strictly prohibited from being employed in agricultural work,—

"वैश्य वृत्यासु जीवंस्तु ब्राह्मणः क्षत्रियोपि वा ।
जीवहिंसा प्रदामेषां कृषिं यत्नेन बर्जयेत् ॥"*

But in the latter age, Parasara allowed brahmanas to plough for agricultural purpose only apart from their six items of duty namely : यजन, याजन, अध्ययन, अध्यापन, दान and प्रतिग्रह. But, in course of time their profession was diversified when they adopted prophecy through astrology, surgery and treatment of diseases, palmistry and foretelling, doing any service in temples or royal houses, etc. Therefore, they were degraded to Vaisya class of *Brahmana* having formed separate groups namely, Kalingi, Sarua, Aranyaka, Halua, Graha-vipra, Madhia, etc. They were deprived of receiving salute from their kings although they wear sacred thread (यज्ञोपवीत) like the Vaidikas. They possessed no access in sacrificial performances. Ultimately, they were lowered in the Chain of gradation of brahmanas. The Mathara-kings of Kalinga are supposed to have established relationship with the Mathariputras and Vasisthiputras (Ikhvakus) of Vengi. With association of Matharas, they revived Brahmanism in both kingdoms, namely, Kalinga and Vengi, which extended from the Mahanadi in the north upto the Krishnaveni (Krishna) in the South. This happened in or about the 4th century A. D. when the imperial Guptas resurrected Hinduism in the North. Maharaja Samudragupta, with co-operation of some Hindu kings (like Satrubhanja of Orissa), expelled the Kushans (*Devaputras*) from India where upon he performed the great *Asvameda-yajna* (अश्वमेध-यज्ञ) after defeating several minor princes in the South, who formerly lived under the support of Kushans or Sakas in this country. Samudragupta's southern expedition crossed over Dakshina-Kosala, Kalinga and Vengi upto Kanchi where he defeated a Pallava King, Vishnu *Gopa* by name.

The Matharas of Kalinga and the Mathariputras and Vasisthiputras of Vengi, the great supporters of Brahmanism, perhaps being patronised by the Guptas, ruled in their respective kingdoms independently. So, the Mathariputras, according to the Nagarjunikunda inscriptions, ruled in Vengi-Mandala, lying between the Godavari and Krishna rivers of the present Andhrapradesh, where they established *sasans* for Brahmanas who were responsible to introduce the Sanskrit language in South Indian territories. Thus, the Matharas of Kalinga followed the similar track in their own kingdom. Hence a flow of migration of Brahamanas took place in Kalinga during the 4th century A. D. The Matharas granted landed property to them lavishly free from all taxation.

The Ikhvakus of Vengi seem to have hailed from Ayodhya of Aryavarta. They established their capital at Vijayapuri when Nagarjunikonda was a centre of Buddhism. Like the sea-port-town of Dantapura of Kalinga, Vijayapuri was also a river-port, hummung with mercantil activity at far of countries through several cargoes.† There were beautiful monasteries in Nagarjunikonda, the second great meeting place of different nationalities of Indian Archipelago, the first being Dantapura of Kalinga where the sacred tooth-relic of the Buddha was installed in a monastery and later removed to Ceylone.

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*Vide Asanpat stone Inscription of Satrubhanja

**Brahmans were to be defecated by avoiding all sorts of cruel action, such as ploughing fields which would kill living creatures under earth.

†*Periplus of the Erythraen Sea.*

In 1926, Nagarjunikonda was unknown to historians. But it was scientifically explored and excavated by Mr. Longhurst in 1931 in which year a railway line was extended to Macherla, close to that historical site of Andhrapradesh.**

Like Vijayapuri on the bank of the Krishna, the capital of Kalinga was located on the bank of the Vamsadhara. Not too far from Kalinga-nagar (modern Mukhalinga) there is a hill called Salihundam, on whose summit there was a great Buddhist Monastery.** Many monasteries were replaced by Saiva Temples in Vengi and in Kalinga during the latter age.

We have already stated that the Matharas of South Orissa and the Nagas of North Orissa revived the glory of Brahmanism even though they caused no harm to the Baudhas and Jain-Acharyas. Those kings worshiped Visnu and Siva and brought learned Brahmanas from the neighbouring countries.

The first copper-plate grant of the Mathara kings of Kalinga, is perhaps issued by Visakhavarman† whose grant was made in favour of five Brahmanas, named Savarabhendaka Visnusarman, Sresthisarman, Agnisarman, Nagasarman and Sivasaraman. The grant was issued in the 7th regnal year of the king on the 7th day of *Hemanta* (Pausa-Magha.) From palaeographical studies we may attribute this grant (of Visakhavarman) to *circa* 3rd centrury A. D. In the ancient age, the dates were recorded with the number of day in a *Ritu* (weather) which might be current at the time of writing. Perhaps, the Indian astronomical year (the solar year) was counted from one equinox to the next corresponding equinox according to the cyclic rotation of six weathers (*Ritus*). Perhaps the system was revised after Aryabhatta and Bhaskara (No. 1) produced their *Siddhntas* on astronomy in the beginning of the 6th century A. D.† being accepted as authority by the contemporary astronomers.

The Copper plate inscription of Visakhavarman consists of three plates, hinged in a copper-ring on which the royal seal is attached establishing the royal sanction of the grant. The system of recording the gift is the same as found in other charters of the Mathara kings with a few minor variation. Each engraved part of the plates contained three lines of writing in 'Brahmi' Character. The language is Sanskrit, free from verbose style. In the last part of the document there are two verses, quoted from the *Vyasa-Gita* which run as follows :

"वहुभिर्वसुधादत्त वसुधा वसुधाधिपैः ।
यस्य यस्य यदा भूमिस्तस्य तस्य तदा फलम् ॥
षष्ठिं वर्ष सहस्राणी स्वर्गें मोदति भूमिदः ।
आक्षेप्ता चानुमन्ता च तान्येव नरके वसेत् ॥"

The first verse is singing the beneficiary result while the second verse is imprecatus relating to religious grants.

One of the donees is Vishnu Sarman, who, according to some scholars, was a reputed author who lived in Kalinga in or about the 4th century A. D. It is high time, however, to identify Savarbhendaka Vishnusarma, our donee, with Vishnusarma of the "*Panchatantra*" fame.

Orissa produced a good number of inscriptions belonged to the Gangas, Sailodbava, Bhaumakaras, Somavamsi kings, Gajapatis, Bhanjas and many other minor subordinate kings, which epigraphs are very useful for compilation of an authentic history of Orissa.

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* It is pitty to say that in the same time some Oriya Historians appealed to the then B. N. R. Company to extend a railway line to Kalinga-nagara to facilitate excavation at Mukhalinga which was not implemented although promised.

** J. B. O. R. S. Vol. XIV, P. 282

† A Commentary on the Surya-Siddhanta, by Parameswara (A. D. 1430)

DURGA PUJA in Orissa and other States

DUKHISYAMA PATTANAYAK

Durga puja as one of the universally enjoyed festivals, is being celebrated all over India with great pomp and fervour in the bright fortnight of the month of 'Asvina', i. e. mostly during October every year. People pay their due obeisance to 'Durga' the mother of the universe, the primordial cause of all creation in order to invoke her benign grace on them. The word 'DURGA' when interpreted (Duh Dukhena Gamyate prapyate asau) means she who is attained through difficulty or hardly attainable or unattainable. But actually she indeed is attainable in difficulty (Duh Dukhesu Gamyate). The Durga Saptasati, therefore, says, 'Durgasi-Durgabhavasagaranaurasanga (IV-11) i. e., "She is'Durga' the boat devoid of attachment that takes man across the difficult ocean of worldly existence."

Unabated when became the demon Mahisasura by vanquishing the gods in a 100 year war and set himself up as the overlord of the three worlds, the Gods supplicated the Trinity and sought deliverance. Goddess DURGA then emerged out of the combined energies of the gods and the Trinity and declared. "I shall only be his, who can conquer me in battle, destroy my ego and be my match in strength, (Durga Saptasati V-120). The buffalo demon Mahisasura takes up the challenge and receives the fatal blow for good when comes out of the beheaded buffalo in his natural shape. This is how the image of Mahisasuramardini Durga being worshipped at several places symbolising the victory of the Good over Bad or of godly power over animal spirit.

Killing the insurmountable (Durgama) demon (Asura), she was verily called the Goddess DURGA (Durga Saptasati XI-49-50) and was prayed.

देवि प्रपन्नात्तिहरे प्रसीद
प्रसीद मातर्जगतोऽखिलस्य
प्रसीद विश्वेश्वरि पाहि विश्वं
त्वमीश्वरी देवि चराचरस्य ॥ (दुर्गा सप्तशती XI. 2)

Have grace on thy supplicants,
O' Devi !

by removing the miseries of the down-troddens.

O' Mother of the universe!

Let thy grace be upon all

You as the mistress of the universe,

and ruler of moving and non-moving,

do protect this universe and

shower thy mercy on all.

In the past Ramachandra while fighting with Ravana found to his astonishment that each of the ten heads of the foe Ravana was coming back to life, the moment they were cut off. In order to get over the difficulty, Rama offered worship to the Devi. She in turn helped Rama to kill Ravana on the eighth day of 'Dasahara'. Rama celebrated his victory over Ravana on the tenth day as 'Vijaya Dasami' which is also called the 'Dasahara' meaning literally that which takes off t e ten heads of Ravana symbolising ten major sins. This account as found in Kruttivasa Ramayana has got the support of Maha-Bhagavata, Devi-Bhagavata, Devi-Purana and Kalika-Purana. Of course the last three Puranas speak of the Chaitra or Vasanti Dasahara. But mention of the autumn Dasahara is maintained in the Maha-Bhagavata and the Durga Saptastati of the Markandeya-Purana. It is therefore, to commemorate the immortal victory of Rama over Ravana symbolising the Victory of virtue over vice, Vijaya-Dasami is being celebrated all over India.

Story of Rama depicting the virtuous and heroic deeds of Rama called 'Rama Lila' is being enacted night after night serially on stages that are especially constructed for the purpose each-year in every town of North India, particularly in Uttara Pradesh. On the last Vijaya Dasami day, the 'Ramlila Maidan' of Delhi, the capital city of India puts up a very colourful festival every year. Effigies of Kumbha-Karna (wifh a black face), Ravana (with a red face) and Meghanada (his son) are set up in that public square. The community assembles after a procession of characters dressed as Rama, Lakshmana, Sita and Hanuman. Arrows are aimed at the effigies and they are set ablaze. They burn weirdly as the Sun sets. The fireworks stuffed inside explode and present an exquisite sight. Some people wait for the effigies to be completely consumed and when they are sure that the embers are dead, they rush to the place to collect the ashes. These ashes they value much as it is a common belief among them that anyone who wears these ashes on his person on this day gets immunity from all kinds of evil influence for the ensuing twelve months.

Youthful merriments through gay dance against the background of ripening maize in their fields, is a remarkable feature during Dasahara in the hill regions of Punjab, Himachal Pradesh and U. P. They dance not only to express their joy at Rama's victory over the demon King Ravana, but also to show their gratitude to the Gods for the bumper harvest. The most picturesque of all Dasahara dancing is probably done in Kulu.

An entirely different festal fervour is noticed in South India, where it is more popularly called the Nava-ratri or the festival of Nine Nights beginning from the first day to the ninth day of the bright fortnight of Asvina. Kulu or the festival of Dolls is more popular in the South than the actual Puja. A flight of steps is arranged and over this a white cloth is spread and brightly coloured dolls are put in such a manner where the biggest dolls form the top portion and the smallest ones occupy the bottom-most row, which depict various aspects of life as imagined by the enthusiastic boys and girls. Every evening teen-aged girls dress themselves attractively and go about from house to house inviting friends and relatives and responding to invitations. It is an occasion for social conviviality where sweetmeats and fruits are given to visitors with pansupari when an exchange of haldi-kumkum is done as a symbol of auspiciousness. The Sri-chakra puja is performed with greater sincerety in the South as against the outer show of the North during Nava-ratri.

Mysore which is famous in the world for its gay festival Dasahara attracts the attention of lakhs of people from far and wide to witness its grand state procession (the Jamboo Savari) brilliant illuminations, exhibitions and the Brindavan Gardens nearby. The Chamundi Hill, where the Goddess is said to have slain the Mahisasura creates an opportunity for the visitors to pay their obeisance to the tutelary deity of the Royal house hold.

Assam, a seat of Tantric-worship is filled with spiritual fervour during puja, particularly at Kamakhya on the Nilachala Hill. No image of the deity is worshipped in the temple: it is the pro-creative aspect of nature—the Yoni of the goddess Sati, the consort of Siva, that is enshrined in it. Acording to Kalika Purana the genital organ of Sati fell here, when her dead body was carried hither and thither in fantic sorrow by her husband Siva. The mountain represented the body of Siva himself and when Sati's genital organ fell on it, the mountain turned blue. The Goddess herself is called Kamakhya, because she came there secretly to satisfy her amour with him. Puja according to tantric rites is being done here every year. But the autumn Durga Puja according to Bengal type that has gone deep into the mind and heart of the people and brings joy of celebrations now-a-days, says Hem Barua in his book 'The Red River and the Blue Hill' (P. 198), has a history of blood and torture,

Panoramic view in a super-excellent manner is presented every year by Bengal which is famous for its Durga Puja all over the nation being a fertile field for the Sakti-worship. Beautiful different images with splendid decorations and attractive illuminations make Bengal resonant with a sense of homogeneity amidst a modest gay atmosphere. The graceful new idols of Durga and others with new imaginations and fresh creative power are made by the sustained artisans for generations in Bengal. On 'Dasami' the idols of the deities are taken in procession and immerged in the Hooghly at Calcutta. Along with the idols the skill and the detail paid and the labour undertaken by the artisan in making them are also immersed in water for good and nothing permanent is left for future except a transitory joy in some soothing comments and commendations. After the immersion ceremony, people sprinkle the river water at one another and return home with a warm heart. Boys and girls touch the feet of their parents and elders and get their blessings and Happiest Vijaya Greetings are exchanged by all without exception. The linking of Dasahara with Durga Puja in Bengal is nothing but an anachronism as the former commemorates Rama's victory over Ravana according to Krittivasa who interpolates Rama's invocation of the Mother in his Bengali rendering of the Ramayan being influenced by the narration of the Sakta-Puranas as against the authentic account of Valmiki's Ramayana, where no mention of Rama's invocation to the Mother is found.

Actually DASAHARA falls on the 10th day of the bright fortnight of 'Jyestha' called 'Ganga-Dasahara' or so, as Ganga appeared first on the earth on the very day and as such the day is capable of washing off the 10 major sins' viz., (1) Adattopadana (accepting something not given), (2) Himsa (violence), (3) Para-daro-paseva (enjoying the wives of others), are the three physical sins; (4) Parusya (roughness), (5) Paisunya (malignity), (6) Anruta (false), (7) Asambaddha-Pralapa (incoherent talk), are the four sins of words; (8) Paradravyesvabhidhyanam (minding for others property), (9) Manasa-nista-cintana (thinking of ill of others), (10) Vitathbhinivesasca (unnecessary indulgence) are the three mental sins as narrated in the Rajamartanda. But tantric predominance of Bengal promoted Krittibasa to include the narration of Rama's invocation of Durga as maintained in tantric-puranas and thus Durga Puja accepted the popular local name Dasahara and was so called later. In Orissa, too the Durga Puja is called Dasahara. But the Dharmasastras like Gadadhara Paddhati and Pandita-Sarvasva, etc. mention the 10th day of bright fortnight of Jyestha and Asvina as Dasahara and Durga Puja respectively. But locally and popularly both are identified in the 10th day of bright fortnight of Asvina.

There is a voluminous literature on Durgotsava. Every digest on vratas, tithis and puja devotes considerable space to this subject. Moreover there are special treatises on Durgotsava or Navaratra, viz. Durgotsava-viveka by Sulapani, the Durga-puja-prayoga-tattva (published by the Sanskrit Sahitya Parishad, 1924) of which the Durgarcana-Paddhati of Raghu-Nandana (published by Jivananda, Vol. II) is a part, Durgabhakti-tarangini of Vidyapati, the Nava-ratra-pradipa of Vinayaka alias Nanda-Pandita, the Durgotsava-paddhati by Udaya Singha (2nd half of the 15th century A. D.) Sarada-Saradarcana-Paddhati by Godavara Misra, and Durgotsava-candrika by Vardhana Mohapatra in the name of Ramachandradeva of Orissa.

The last mentioned work the 'Durgotsava candrika' by Vardhana Mohapatra brought a revolution in the ceremonial puja of Durga in Orissa. It introduced tantric rites in it by discarding the Smarta method as prescribed by Godavara Misra in his Sarada-Saradacana-Paddhati. Vardhana wanted to emphasise the congregational character in the Durga-puja which has a social bearing of uniting the nation. He, therefore, prescribed the puja to be performed not only by persons belonging to the four varnas but

the Durga Puja which has a social bearing of uniting the nation. He, therefore prescribed the puja to be performed not only

by persons belonging to the four varnas but also by those who are outside the pale of the caste system and said :

राजन्यानां ब्राह्मणानां विशाञ्च
शूद्राणां वा सर्ववर्णाङ्गनानाम् ।
म्लेच्छानां वा भक्तिचर्य्याविशेषैः
कर्मण्यस्मिन् निर्विवादोऽधिकारः ॥

i. e., all inclusive of Kings, Brahmins, Merchants, Servants, women of all castes and the down-trodden have got without question equal right in the act of worshipping the Mother Goddess. He prescribes the idols made of metals with four or eight or sixteen hands to be worshipped. Of the worshipped deities in Orissa Viraja and Bhattarika have two hands, Vimala of Puri and Chandi of Cuttack have four hands, all other deities called Durga or Jayadurga have four hands and Sarala as eight hands. The ten-handed clay images now found to be worshipped during Dasahara are only an outcome of Bengal's influence of extensive worship of clay-made Durgas. But in Orissan temples mostly four-handed metal or stone made images are found to be worshipped in the traditional Vana-Durga or Jaya-Durga Mantras.

All should worship the Goddess of Power as an embodiment of cosmic energy in order to build a powerful nation and attain success in all the endeavours of the self. Vijaya-Dasami is mainly a festival of Kshatriyas and has, for centuries, been observed with great eclat by the Kshatriya Kings of the nation. In Orissa the Rajahs and Zamindars were also perfoming the Puja in grandeur with processions, parade of the armies, horses, elephants and then shooting at particular point and thus giving scope to exhibit one's prowess before others for being awarded besides the regular puja of the Devi in the way the puja is now observed at Mysore in a grand scale. The house-holders were doing puja mostly according to Tantric rities ether by installing a Yantra or an image made of a mixture of eight-metals. The striking speciality of Orissa in the performance of Dasahara Puja is that all the house-holders put the sword, etc., weapons, the braid of paddy-stalks and the stylus along with the palm-leaf manuscripts on three pedestals and worship them with devotion as representatives of the three aspects of the Divine Mother, i.e.. Mahakali, Maha Laksmi and Maha-Sarasvati respectively as depicted in the Durga-Saptasati. In addition, different people as a sign of gratitude use to worship their own instruments that are helpful in earning their livelihood, e.g., the writers' community place their pens, the teachers and students place their books. the farmers place their furrows etc., in honour in the Puja Chamber before the Goddes and beg Her blessings in becoming energetic through their own way of living in all possible ways. The 'Bali' or sacred sacrifice of one's ego is also made into pieces at this time by cutting a 'Jahni', a ridge gourd vegetable. This is the outcome of Tantric influence which even entered into the shrine of Sri Jagannath where sacrificial rites are observed in the Puja of 'Vimala' on the midnight of Mahasaptami Day, according to Durgotsavacandrika indroduced by Vardhana Mohapatra with a view to keep people energetic and valorous by taking non-vegetarian foods. In the outside, general public put up duly decorated stalls and worship the clay-images in varioas forms and then immerge them after the Dasahara. Cuttack, the ex-Capital City of Orissa is famous for Durga Puja of Calcutta type. The artisans of Cuttack display their originality of ideas by making a number of innovations while making the graceful clay-images. Man makes God in his own image is found to be correct and one can witness this at Cuttack only during the Puja time. The immersion of the Devi idols at the Kathajori river imparts a befitting finale to the Puja celebrations and devotees with tears rolling down their eyes bid adieu to the Mother.

Nation-wide observance of the Durga-Puja in ecstasy has made it a national festival. All take part in this festival in equal measure and thus feel oneself identified in the whole with untired juvenile spirit by accumulating the spirit within. Durga acclaimed for her prowess and strength is mainly a war-goddess. She, according to the Durga-Saptasati, one of the most favourite religious books of the Hindus, assumes the forms of Mahakali, Mahalakshmi and Mahasarasvati for the annihilation of the demons and showers blessings on the devoted gods who get a riddance from the life of dread created by the demons. In fact the three entities are the aspects of the same Supreme Power according to attribute. Mahalaksmi is the goddess of secular glory and embodies the principle of sustenance and beauty. Mahakali is emblematic of violence and fury of destruction, dread and horror. Mahasarasvati is an embodiment of knowledge. The omnipotent Divine Reality (Parasakti) is identified with Mahalaksmi from whom emerge Mahasarasvati and Mahakali. These three entities serve as a causative principle of the creation. Brahma—the creator, Visnu—the protector, Siva—the annihilator and their consorts Sarasvati, Laksmi and Gouri rank first in the order of creation and thus they are with their counterparts but Durga is without counterpart and as such called 'Nihsanga' or without attachment in 'Durgasi' 'Durgabhavasagaranaurasanga' (Durga Saptasati IV-11). It is, therefore, Durga who should be propitiated for the cause of a happy resourceful nation to be powerful in all possible ways without attachment or self-interest.

An embodiment of unconditioned dynamism, 'Mother Durga' should verily be propitiated in an agricultural country like India. The nation cannot improve unless it improves its agriculture in oder to solve its food problems. Durga is also a Goddess of agriculture, who is worshipped just before two harvesting seasons i.e., during spring in Chaitra and then once again after six months during Asvina. Durga is none else than Mother India. She should be propitiated by one and all conjointedly to achieve the goal, to protect one self trom the attack of the enemies, and to be successful and resourceful in all possible ways for victory and prosperity as follows:

I

ओऽम् । ध्याये सुवर्णवर्णाभां त्रिनेत्रां चारुहासिनीम् ।
सर्वलक्षणसम्पन्नामर्द्धेन्दुकृतशेखराम् ॥
चतुर्भुजां शङ्खचक्रधरां बालां शुरूपिणीम् ।
उद्यत्रिशूलनिर्भिन्न महिषां सिंहवाहिनीम् ॥
मुक्तादामलसत्कण्ठां मुनिभिः स्तुतिपाठकैः ।
सिद्धैर्देवगणैर्जुष्टां कुमारीभिश्च सेविताम् ।
सर्वकामप्रदां दुर्गां वरदां भक्तवत्सलाम् ॥

Yellow in colour as that of gold,
the three-eyed
one with a beautiful smile,
possessor of all good signs and the crescent moon on her head,
beautfiul in early youth
riding on a lion
and having in her four hands—
the conch, the disc
and piercing the buffalo demon
with her raised trident;
surrounded by the celebrated and gods, served by the girls and eulogised by the sages—
I meditate upon
DURGA—the unattainable,
the giver of boons,
the lover of devotees
and the fulfiller of all the cherished objects.

II

सिंहस्था शशिशेखरा मरकतप्रख्या चतुर्भिर्भुजैः
शङ्खं चक्रधनुः शरांश्च दधती नेत्रैस्त्रिभिः शोभिता ।
आमुक्ताङ्गदहारकङ्कणरणत्काञ्चीक्वणन्नूपुरा
दुर्गा दुर्गतिहारिणी भवतु वो रत्नोल्लसत्कुण्डला ॥

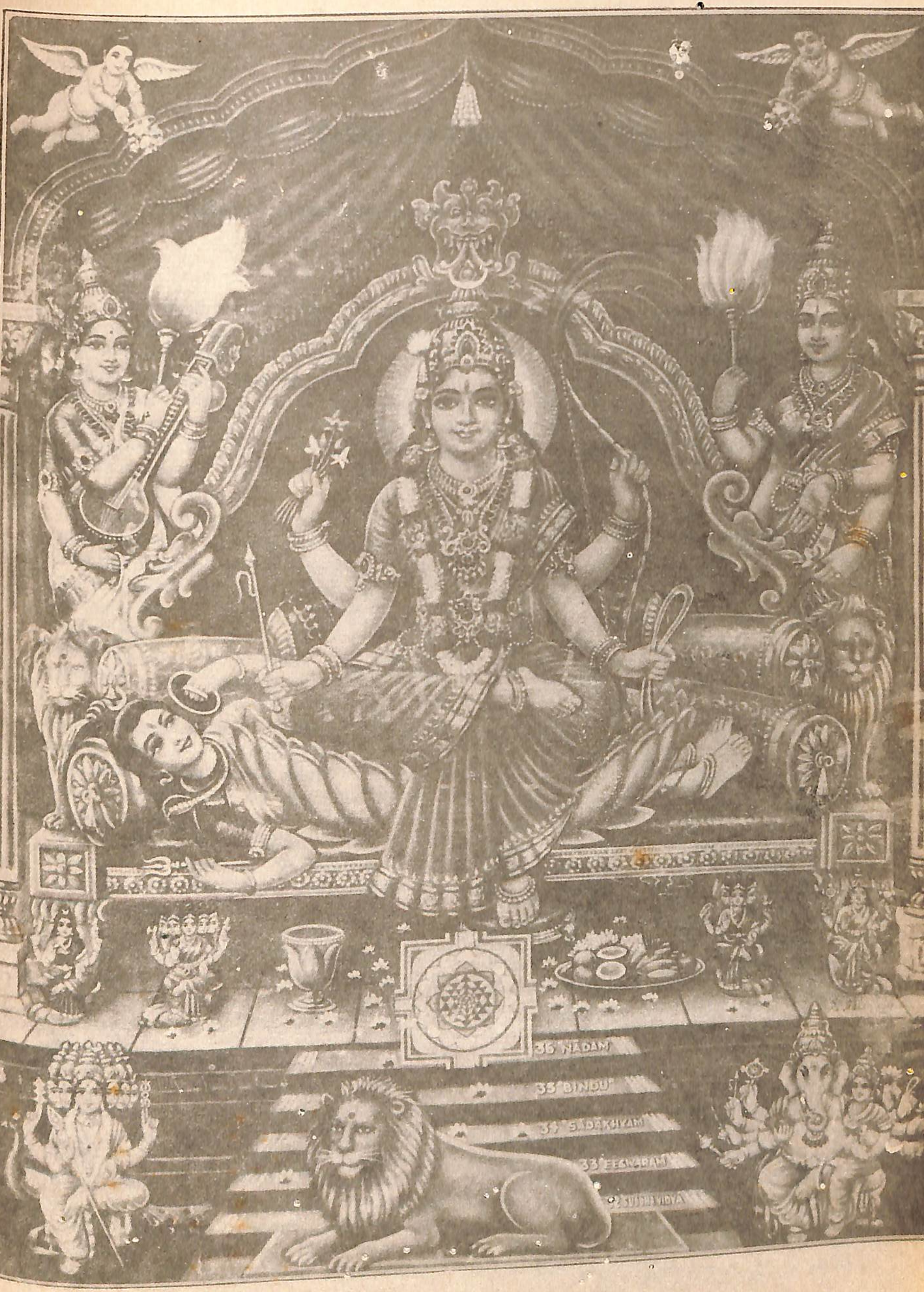
Ascending on a lion,
having crescent moon in her head,
she of emerald colour,
having in four hands—
the conch, the disc, the bow & arrow:
beautiful with three eyes,
adorned with pearls all over,
a bracelet worn on the upper arm,
ornament on the wrist,
a necklace, a jingling girdle
and a tingling anklet on the waist,
let DURGA, the unattainable Mother,
with the dazzled ear-rings
dispel our miseries.

III

कालाभ्राभां कटाक्षैररिकुलभयदां मौलिकादेन्दुरेखा
शङ्खं चक्रं कृपाणं त्रिशिखमपि करैरुद्वहन्तीं त्रिनेत्राम् ।
सिंहस्कन्धाधिरूढां त्रिभुवनमखिलं तेजसापूरयन्तीं
ध्यायेद्दुर्गां जयाख्यां त्रिदशपरिवृतां सेवितां सिद्धकामैः ॥

Knitting the crescent moon
on the head
raising fear amidst the foes
by her side-long looks,
she the three-eyed one,
looking like a black cloud,
possesses in her hands—
the conch, the disc, the sword and the trident,
laying herself on the back of a lion
fills the whole world with her lustre,
being surrounded by the gods
and attended by rhe demigods;
I meditate on Thee—
Durga, the Victory.

◆



विधिहरिहर धृत सिंहासनगतशवशिवनाभिमृणाले
निवससि शरदिरुचिरुचिरे दिक्शुचिवसने शुचिकुरजाले ।
यौवनगौरव समधिकसौरभशालिनि शिशुशशिभाले
जय षोडशि शङ्करि देवि शुभङ्करि सुरपुरकुसुमितमाले ॥

Challenges of the Teachers' Day

Dr. JAGANNATH MOHANTY

"The quality of a nation depends upon the quality of its citizens. The quality of its citizens depends—not exclusively but in critical measure—upon the quality of their education. The quality of their education depends, more than upon any other single factor, upon the quality of their teachers". These words of the American Commission on Teacher Education cannot be over-emphasized. The teacher is the living ideal, the important fountain-head of knowledge and the potential guide to provide directive for the growth and development of students of today as the worthy citizens of tomorrow. Although in course of time the role and functions of teachers are changing, they are always regarded as the benefactors of mankind. Their work does not confine to a particular state or a country, it transcends all the limitations and boundaries and spreads the whole world. Similarly, their contributions do not confine to a particular period, months or years, but influence the entire span of time. That is why, Adams has observed, "A teacher affects Eternity ; he can never tell where his influence stops".

In the ancient India teacher was ranked next to God. An old Indian prayer says "The teacher is God Brahma ; he is God Vishnu ; he is God Maheswara. He is the whole universe, obeisance to teacher". The ancient law-giver Manu has observed, "A teacher is the image of Brahma ; a father is the image of Prajapati, a mother is the image of the Earth. By devotion for the mother the child obtains the world; by devotion to his father, the middle world; by devotion to his teacher the Brahmana world". According to Indian culture a child receives his first physical birth from the parents and the second birth at the hands of the teacher. Rather, higher position is given to the teacher. Because he opens the pupils' eyes of knowledge and moulds his character, knowledge, skills, interests and attitude. As it is said that God created man after his own image, the teacher fashions his student after his own image.

The qualities of head, heart and hand constitute the teacher's personality. His intellect, knowledge and thoughts are the qualities of head ; sympathy, understanding, fellow-feelings, love and affection are the qualities of heart; and handwriting, drawing, painting and other muscular activities are the qualities of hand. Thus his personality traits, academic achievement and professional efficiency determine his image as a teacher. The secret of his success lies in his love for his work and love for the students. K. G. Saiyidain pointing out love as the secret of his personality says, "Love that unlocks all doors and conquers all obstacles." With affection he will gain confidence of the child, wins into his heart and releases his dormant force and energy. Sacrifice and dedication to his service enables him to earn everybody's respect and admire. His moral character and humanitarian qualities of love, sympathy, compassion, affection and so on, are more important than his intellectual achievements.

Teacher should be the living incarnation of the great trinity of Truth, Goodness and Beauty. He must have a deep sense of reasoning, right and wrong ; he must cultivate non-violence and objective outlook towards everything and he must appreciate beauty and orderliness. Teacher must have robust optimism and free from frustration and pessionuism. If he lacks in idealism and compassion, his personality will be a dead wood without any tender feelings for anybody. His vision of life must be based on love, sympathy and affection for all in general and for the needy and deprived classes of the society in particular.

Gone are the days when the teacher was the supreme master of the educational arena. He was the school, he was the text-book and he was the moral force. Nobody was there to rival, to share his responsibility and to supplement his efforts. The school had the monopoly over all sources of knowledge and was the only light-post of education on a vast area. But the conditions have changed and the situations have improved. Many agencies of education have come; several media have emerged; and variety of materials are being used for education. Now schools have lost the monopoly of learning; teachers have ceased to be the only providers of education; no curriculum is obligatory and no certificate is a licence for anything. Ivan Illich, the prophet of Desschooling Society has emphatically said that most of education takes place before school, outside school and since school. Schools are not the only places of learning and children at present are allowed to learn freely and widely. There are radio, television, newspapers and other printed materials; there are meetings, conferences and congregations of all kinds political, social, cultural, literary and religious. And all these have also educational roles to play and individuals are all exposed to such learning.

Therefore, teachers have to labour hard for keeping themselves not as the *only source* but as a *main source* of learning and knowlege. They have to keep themselves abreast with the latest trends, ideas and practices in their respective fields. There has been explosion of knowledge in every field. Unless the teacher continuously learns himself, he cannot be a good teacher. He will fail in his duty if he is not able to satisfy the educational needs of the students. He will not be able to do justice to his duties and responsibilities if he is not up to-date with the modern knowledge, techniques, methodology and media. He will have to keep in his mind the following immortal words of the Viswakabi Rabindranath and work accordingly:

"A lamp can never light another lamp,
Unless it continues to burn its own flame:
A teacher can never truely teach
Unless he is still learning in himself".

Today students are quite advanced in their mental age—in their intellect, ideas and outlook. They are curious to know and have many doubts. Teachers have to meet these queries and satisfy this hunger with confidence. Therefore, they have to democratise their approach, methods and class organisation. There must be adequate freedom, flexibility and frankness in them. Questioning must be encouraged and responsibility must be shared in school administration as well as class organisation. There must be equalisation of educational opportunity and adequate interaction between the school and the community. The International Commission on Education for Development has aptly said, "Democratising education does not only mean giving more education to more people, but also involving more people in educational management". But unfortunately most of our schools are divorced from the society and the conditions prevalent in the schools are adverse to the growth of democracy. Our teachers should recreate education and reorganise their approaches to education in order to cope up with the changed situations.

With a view to deserving a respectable position and status in the society, teachers have to play their role more effectively and meaningfully and for that, they have to be well equipped with adequate knowledge, skills, attitude and interests suitable for this age of science, technology and democracy. These are the challenges to be taken up by the teachers and on their success depends the success of education as well as prosperity of the nation.

Officer-in-charge
Educational Technology &
Publicity, State Council of
Educational Research and
Training, Orissa, Bhubaneswar

From the Editor

In its thirty-eighth year, Orissa Review finds a new Editor-in-Chief for itself.

'Orissa Review' will endeavour to project the story Orissa's struggle for achieving the ideals of socialism, democracy, secularism and progress.

Orissa has remained backward for too long a period. But this state of affairs cannot be allowed to continue any longer. We have to march forward at double speed to catch up with States considered developed in a decades time. This is the avowed objective of the present Government headed by Shri Janaki Ballav Patnaik—the Chief Minister. Economic prosperity of the State is our goal—and it has to be achieved both in the fields of agriculture and industry. To attain this goal—the things needed most are courage, dedication and cohesiveness which the present Government is bent upon to achieve at all cost. Cohesiveness is the unity of purpose and will-power. Courage is the willingness to plan optimistically and execute the programmes without fear or favour. Dedication is *sine qua non* to success. It will be our effort to encourage such qualities, so that the people may gain self-confidence and can hope for a bright future in the shortest possible time.

In our attempt to achieve prosperity, the onward march has to be fast and in all walks of life specially in those which affect the society such as education, health, irrigation, power, industry, agriculture, dairy, poultry, pisciculture etc. and the needs of the common man are to be met. How does the State machinery act to achieve these results ? These attempts will be portrayed in 'Orissa Review'.

We are grateful to our beloved Prime Minister who paid a brief visit to the State on September 4, 1981. Her words of encouragement are a source of inspiration to all of us. Orissa Review in this issue tries to project Prime Minister's visit to the State.

Satyananda Champatiray

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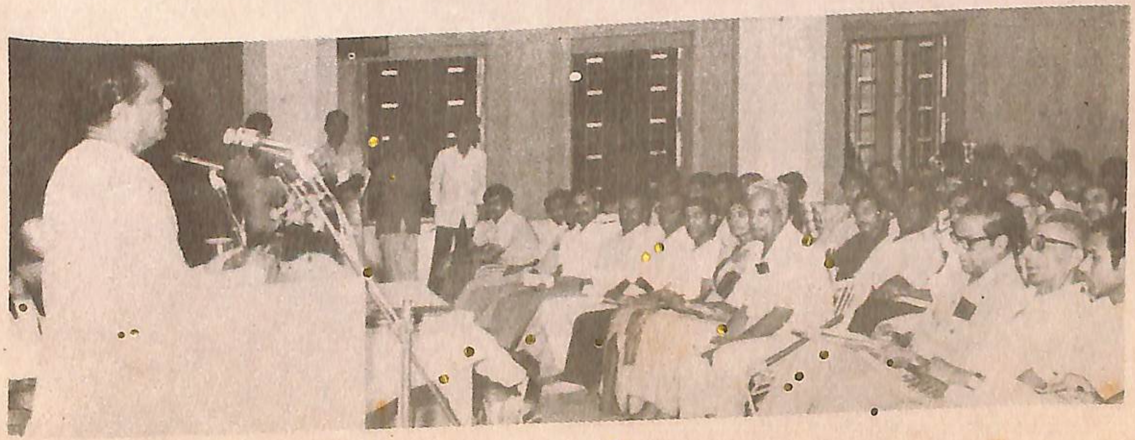
Dr. Sadasiv Misra presenting his report on College Education to the Chief Minister Shri J. B. Patnaik at the Secretariat, Bhubaneswar on August 21, 1981.

Shri Ram Chandra Ulaka, Minister, Harijan & Tribal Welfare inaugurating the 11th Anniversary function of H. & T. W. Department Cultural Association at Rabindra Mandap, Bhubaneswar on August 20, 1981.



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